FARMERS DIGEST

25¢

Contents for May 1954

A Responsible Statement on Milk Price Supports	Hoard's Dairyman	1
Dye Brand, Easy Way To Identify Cattle*	University of Wyoming	2
Hay Drying at Mulhcocaway	Guernsey Breeders Journal	3
How To Handle Daily Rationed Grass	Breeder's Gazette	6
Know Your Soil Types for Chemical Weed Control*	Colorado A. & M.	8
Self-Service for Steers	The Rural New Yorker	9
Big Change in Haymaking	The Agricultural Situation	13
Are You Leaving Pigs on Sows Too Long?	Successful Farming	16
Symptoms of Cattle Choking*	Oregon State College	18
Grass Silage in Stacks and Trenches	Illinois Bulletin	19
Veal Market Could Save Dairy Income*	Michigan State College	26
New Ewe Testing Program	The Farmer	27
Methoxychlor-Sprayed Hay Is Safe For Dairy Cows*	West Virginia U.	28
Look What They're Doing To The Cow Barn	The Farmer	29
New Weed Killers For Pastures	New Jersey Farm and Garden	33
Careful Credit Cuts Expenses	Breeder's Gazette	35
Anhydrous Ammonia Fertilizer	National Fertilizer Review	39
Vegetable Insects Have Declared No Truce	Pennsylvania Farmer	41
A Lot of Folks Plant a Lot of Pines	Soil Conservation	45
Sheep Management Tips*	Virginia Polytechnic Institute	47
Fork Lift Truck Cuts Orchard Costs	American Fruit Grower	48
Sure Your Farm Lease Is Not Out of Date?	Kansas Farmer	49
Hybrid Seed Corn Without Detasseling	Michigan Farmer	53
Don't Underestimate Value of Manure*	Purdue University	55
Vet's Notebook: Be Careful of Fresh Grass	Farmer & Stock-Breeder	56
How to Dry Lumber in a Hurry	Ohio Farmer	59
Handling Liquid Manure	Electricity On The Farm	61
Weed Killers in Corn Save Time*	Indiana Extension Service	62
Irrigation: More Than Crop Insurance	Soil Conservation	63
Malathion Keeps Barns Free of Flies*	Michigan Extension	65
Four Heads Are Better Than One	Capper's Farmer	66
Farm Fresh Fryers Find Ready Sale	American Poultry Journal	69
More Profits Through Soil Testing	The Hereford Journal	71
Record Hatches Spell '54 Poultry Troubles*	Oregon Extension Service	74
Are These Fire Hazards In Your Home?	Missouri Ruralist	75
Something for the Boys	Capper's Farmer	77
Band Seeding Improves Legume Stands	Eastern States Cooperator	79
Don't Sell Poultry Pasture Short	Poultry Tribune	83
Do You Need A Lawyer?	The Dakota Farmer	87
Improvements Unlimited	Western Farm Life	91

*Short Features in this issue. One-year continuing index, Pages 94 and 95

The Farmer's Digest

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"Your Farmer's Digest has been a great help to some of the farmers in this community and to me. I visit many farms each day and discuss with them their plans and problems. Your magazine is so condensed and without non-essentials that finding information is almost like looking for a word in the dictionary". Artificial Breeding Technician.

Farmer's Digest Summer Publication Dates

During the summer months Farmers Digest is printed and mailed to you every 45 to 50 days instead of monthly. This practice, started years ago, keeps our subscription rates down by giving you fewer copies during the months you have less time for reading. You will receive our June-July issue on or about June 20, our August-September issue on or about August 10. October and succeeding issues will again arrive near the first day of the publication month.

Coming In June-July . . . Don't Miss These Important Articles

Below are a few of the carefully selected articles to appear in the June-July issue of Farmer's Digest. If your subscription is expiring or if you are not now a regular subscriber, take a minute now to renew or enter your subscription. Farmer's Digest can make money and save money for you. Don't miss the valuable articles below:

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The Farmers Digest

Volume 18 May 1954 Number 1

A Responsible Statement on the Drop in

Milk Parity Price Supports

Condensed from an editorial in Hoard's Dairyman

THE government decision to drop parity price supports on milk from 90 to 75 percent beginning Apr. 1 appears to be based on three considerations. First, the Friday before the price support announcement, the national livestock inventory was reported. It disclosed what everyone had feared. Milk cow numbers had climbed to 24,735,000, an increase of 3 per cent since Jan. 1, 1953. This bulge combined with the 2.6 per cent gain reported a year ago clearly showed that 90 percent of parity support was attracting a lot of in-and-outers back into the dairy business.

The second consideration, related to the first, was the annual rate of milk production. Apparently we have a market for about 115 billion pounds of milk at 90 per cent support levels. This was our production in 1952. Last year, however, we produced 120,200,000,000 pounds. And here is what we did this last winter. During December and January, we produced milk at the rate of 129,000,000,000 pounds. Frankly, there is a floodwall of milk rolling down the 1954 valley that may be impossible to handle. Something drastic had to be done to try and shut down on the supply. The drop in supports should tend to discourage in-and-outers from further burdening the market to the detriment of established dairymen.

The third consideration may have been based on a recently

Reprinted by permission from Hoard's Dairyman, Fort Atkinson, Wisconsin

published dairy demand-price study. It shows that a 10 per cent drop in the price of fluid milk and cream results, on the average, in a 5 to 6 per cent increase in sales. Butter sales may increase from 6 to 10 per cent. Because the added processing and marketing costs are relatively fixed, the percentage drop in retail prices will not be as great as the percentage reduction at the farm. As much as we regret the inflexibility, it is still there. The result expected is a drop of about 10 per cent in retail butter prices and 5 to 10 per cent in the retail price of fluid milk. It is not difficult to predict, therefore, that even with the full parity drop to 75 per cent, it will be nip-and-tuck to move our greatly increased flow of milk, even if we close our eyes to existing surplus stocks.

The decision to drop supports all the way to 75 per cent must have been difficult. We are certain no responsible person wanted to do it.

As much as we regret the apparent necessity for drastic action, the Secretary of Agriculture had little choice. He has no congressional authority to control the use of 25,000,000 to 30,000,000 diverted acres nor has congress shown any intention of approving the self-help dairy stabilization board proposal. Either tool would have made the full drop in parity supports unnecessary. Since congress has not given him effective tools he must use the inadequate tools the best he can.

Dye Brand Is Easy Way To Identify Cattle

To carry out selection programs in beef cattle, such as weight-for-age comparisons of calves, selection of top-producing cows, and culling of poor-producing cows, some way must be used to identify the cows and their calves.

Experiments last year in Arizona and in progress this year in Wyoming show that a black dye, Nyanzol, may be used successfully. While not permanent, this dye is good for the life of the hair coat. How long it lasts will depend on time of year it is applied and on rate of shedding of the hair.

C. Schoonover, University of Wyoming, suggests that, in carrying out such a selection program, all cows be dye-branded by number or by code before calving. Then at weaning time it would be easy to identify the cow and calf, and selection could be made according to the particular program the rancher is following.

University of Wyoming

Hay Drying at Mulhcocaway

Wagon-drying of baled hay proves profitable on this New Jersey farm. . .

Condensed from the Guernsey Breeders Journal.

L. B. Wescott

FOR years I have been convinced that the farm job we did the worst was haymaking. If, for instance, I lost as much of my corn crop, or my barley crop, or my heifer crop, as I did of my hay crop, I would quit farming. Somehow, I just took it for granted that as it had always been so it probably always would be, and I went through season after season, cursing the weather, berating my men, giving my stomach ulcer a heavy workout, and making a lot of lousy hay.

By the summer of 1951, a number of farms had done a good bit of work with hay drying. Starting with mow drying of loose chopped hay, the tendency seemed to be toward platform drying of baled hay. It had always been my inclination to give any new idea in farming a fling. Some of these ideas turned out well, others did not. In the matter of hay drying, I had been content to let others do the experimenting while I looked on with a rather jaundiced eye.

Then, in the summer of 1951, I had an experience that was not new to me—the Lord knows—and must be an old story to many farmers. I lost about 15 acres of top quality hay. We had cut it to be ready on July 3 so we could have the fourth off. The third stayed overcast and the hay stayed tough. The morning of the fourth we turned it—hopefully. That noon it sprinkled. The sun came out in the afternoon, but the hay was still too tough. The fifth was overcast and the hay would not dry, and in the late afternoon it poured. It rained the next two days and I chopped the black, mouldy mess back on the ground. On at least three occa-

Condensed from the Guernsey Breeders Journal, Peterborough, N. H.

sions that hay had been within a few points of being dry enough to bale.

A little figuring told me that there were, in theory, over 15 tons of hay, worth $40.00 per ton, in that field, when in reality I had nothing. My manager, George Shellenberger, and I decided that something had to be done.

As we found baling the only suitable way to handle hay on our farm, we thought at once of a platform drier. We called in Ray Poorbaugh, who sold the Crop Drying Units, and the three of us tried to find a place to set up a platform drier. Nothing seemed suitable, and I asked why one could not make the wagon the platform, and thus save time and labor. Ray said that Harvey Dreibelbis, then at Llan Fair Farm, had dried hay on a wagon by building a tunnel through the load and forcing the air into the tunnel from the end.

Before the afternoon was over, we had designed a simple setup, which we built in the next few weeks. We had three flat bodied hay wagons. We removed the wood floor and replaced it with perforated metal flooring. With plywood we enclosed the underside of the bed pieces, making an airtight chamber under the entire wagon floor, with an opening in the rear about three feet long and 18 inches high.

Along the back of an old wagon shed we built a plenum, or airchamber, of plywood, four feet square, and extending from the outside through three sections of the shed so that three loaded wagons could be backed up against it. Three doors in the chamber corresponded with the three openings in the wagons, and connecting "boots" of canvas could be clamped in place. The burner unit stood outside and connected to the end of the plenum chamber. The heated air was forced into the chamber, on into the wagon, and up through the perforated floor through the hay.

Canvas covers hung from rafters were lowered over the loads to prevent condensation of warm moist air on the outside of the load. A small opening in the top of the canvas cover forced the air away before it cooled. The entire unit worked better than any of us dared hope.

As we had taken half of one machine shed for a bull barn and half of another for calves, we decided we would have to build a permanent setup. We built a shed to hold six wagons, with a burner unit at each end, a plenum chamber along the back, and sliding doors along the front. This serves for machine storage in the winter and gives us a place to hold field days, to

classify, etc., in case of bad weather.

The New Holland Machine Company designed three all-metal wagons on an experimental basis, giving us six wagons in all. This year and last they have done some research work here with Rutgers University on the whole problem of drying hay. They have worked with various types of floors, with wooden sides, forcing the air down from the top as well as up from the bottom, recirculating the air, determining the effect of various temperatures, and a number of other things. Certainly improvements will be made in the years ahead. However, I feel sure the basic idea is absolutely sound.

What about drying time? Obviously, this is determined in a large measure by how wet the hay is when we bale it. In general, we feel that the first moisture comes out in the field very rapidly. It is the last 10 or 15 per cent of moisture that takes so long, and it is this that the drier can do best. Actual drying time has ranged from 12 hours to four days. We can make top quality hay and average not much over 15 hours on the drier if we bale when it is still good and tough, and before the leaves start shattering too much.

What of costs? The first three wagon installation we made in the old shed cost about $3,800, including the burner, the rebuilt wagons, the plenum chamber and the canvasses. This included carpenter labor at going rate. Any farmer who has a gift for "fixing" could do it for less. Operation costs vary widely, depending on the amount of moisture. The maximum cost for fuel and electricity should not exceed $5.00 per ton, and can be kept well below that.

What of savings? We don't ruin any more hay. In addition, the bulk of the hay in our barns would grade U. S. No. 1 or better. In addition, it is possible to handle the farm help more efficiently. We used to cut down large amounts in an attempt to beat the weather, and often found it necessary to turn it over and over and fuss and wait around for it to dry. With the drier, we can start early in the season, we cut small amounts, and we keep at it day after day and get the job done. The batch or platform drier has very much the same advantages except that the hay is handled twice more—off the wagon onto the drier and then back onto the wagon to take it into the barn.

If I sound enthusiastic, I can assure you I am. I can safely say that no other single change in my farming operation has been as important as this one, and I include grass silage and hybrid corn and D.D.T. and the pickup bailer.

Daily Rationed Grass

A cow can eat only one day's feed in a day, so why should a month's feed be placed before her? . .

Condensed from the Breeders' Gazette.

Lee Elam

DO you want to produce more pasture? Would you like more uniform production from each cow? Then put your cows on a Daily Rationed Grazing Program. You will have less wasted feed by trampling; droppings will be scattered uniformly, weeds more easily controlled; you can begin pasturing earlier in the spring and pasture later in the fall, the herbage is utilized when it is at its best; there is less danger of bloat; pastures will last longer; feeding of hay and silage can be cut; it is easier to make hay or silage of excess.

A cow can only eat one day's feed in a day. So why should a month's feed be placed before her at a time? Dairyman Paul Tiedeman, in Napa Co., Cal., has had his cows on Daily Rationed Grazing two seasons now. He has just 20 acres of irrigated pasture — orchard grass, rye grass, burr clover and ladino. His pastures are 600 feet long. Each morning after milking the cows are turned onto an area varying from 30 to 50 feet wide, by 300 feet long. Width depends on the amount of pasture growth. After evening milking they are turned into the other half of the original 600-foot strip till morning.

To hold the cows in these small areas, temporary fences are used. Mr. Tiedeman has found a simple iron rod-type fence post can be easily pulled up and driven in at a new location each day. To these he attaches a smooth electrified wire. Each time the fence is moved the wire is unclipped from the insulators on the posts and rolled onto a homemade reel. Moving fence takes but a few minutes each day.

Before turning to rationed

Reprinted by permission from the Breeders Gazette, Spencer, Indiana

grazing, Paul was able to use his 20 acres of irrigated pasture only from April 1st to Aug. 31—5 months. During that period he also had to feed 250 tons of silage or hay to supplement the pasture. By rationed grazing, he has stretched out the use of the pasture from Mar. 1st to Sept. 30th—7 months. More remarkable is the fact that only during March and September does he feed any silage or hay, and that at the rate of 15 to 20 lbs. of silage per cow a day. From April through August, the green rationed pasture is the only forage the cows receive except at milking time when they get their concentrates—1 lb. of grain mixtures to each 5 lbs. of butterfat produced per month. This rate of concentrates is regular every day, whether on pasture or not.

During the 5 months the 60 cows were on pasture with no supplement of hay or silage, **they produced an average of 649.7 lbs. of butterfat per acre.** The income per acre for 5 months was $812.13.

There are no violent day-to-day ups and downs as on large pastures, caused by cows gorging the first two or three days, then not eating well on the remaining coarse feed. Daily rationed grazing causes them to eat all available feed, succulent and coarse, raising pasture production.

When pasturing was in large fields the herd average was 420 lbs. b.f. per cow. The average was raised to 440 lbs. the first year of rationed grazing. Increase in milk production has been an average of 2½ cans per day, worth $11.25 more.

Mr. Tiedeman says that the system has eliminated bloat. Fertilization of pastures over and above the more evenly spread droppings helps the pasture growth. He puts on 400# of super-phosphate per acre after the first grazing in the spring and 100# of ammonia sulphate in July to help the fall pasture.

Wesley and George Sawyer by using rationed grazing have doubled the carrying capacity of their pastures; they are able to pasture their cattle from May until October without giving hay. Carl Avrit when using large pasture fields kept 30 cows, averaging 12,401 lbs. b.f. The first year he changed to rationed grazing his pastures carried 41 milk cows and 20 head of young stock, and production of butterfat was 17,102 lbs. The second year of rationed grazing his pastures showed a still greater capacity and he was able to carry 47 milk cows and 25 head of young stock. Production was 19,607 lbs. of b.f.

But these higher yields are greatest only when the proper growth period is allowed between pasturings. U. of C. men

find that on the basis of one mature animal eating 25 lbs. of dry matter per day, a 20-acre pasture with two weeks' growth between grazings can carry 21 cows. If three weeks are allowed between grazings, same pasture can carry 27 animals; and if four weeks, 31. If five weeks are allowed, it will carry 40 cows, but 5 weeks gives some decrease in palatability.

Cure Found For Pinkeye — Two Michigan State College veterinary researchers have found a cure for pinkeye in sheep. It's chloromycetin, report Drs. W. R. Rily and R. D. Barner. Pinkeye in sheep causes ulcers and blindness if left untreated. The chloromycetin ointment, bought on prescription from a veterinarian, costs about $1 for enough to treat 20 sheep. The researchers, who found the cure, still are looking for the cause of sheep pinkeye.

Important To Know Soil Types In Chemical Weed Control

When controlling weeds with chemicals, you can save money and prevent possible damage to your crops by knowing the soil types on your farm.

The amount of soil-applied pre-emergence herbicides necessary for a good weed kill without crop damage is directly connected with the amount of organic matter in the soil on which the weeds are growing, according to Colorado A & M scientists.

Growers not acquainted with their soil types, they say, may apply more of the chemicals than necessary, with damaging results to the crop.

Botanists point out that larger applications of the herbicides are generally required for soils high in organic matter than for light, sandy soils. This characteristic holds true for such selective pre-emergence weed killers at TCA, Chloro-IPC and certain di-nitro compounds, all of which are applied to the soil.

The scientists explain that organic matter in heavy soils renders a portion of the herbicides useless and the application must therefore be heavier than for light sandy soils low in organic matter. Manufacturers are now aware of the different reactions noted in tests and recommend two different rates of application: one for heavy and one for light soils. Scientists urge growers to follow manufacturers' directions and consult their county agents if in doubt about the soil types on their farms.

Colorado A.&M.

Self Service for Steers

At Fiddler's Creek Farm they are experimenting with a self-service, no-pasture program for steers. Here are the results. . .

Condensed from The Rural New Yorker.

J. N. Bodurtha

THERE is a hill farm in New Jersey, not far from Lambertville, Hunterdon County, that has attracted attention because of its self-feeding silos and haybarns. It is the Fiddler's Creek Farm, property of Paul Mazur. Its land area is 131 acres; 80 are tillable. Robert Barnhart is manager of the farm.

Mr. Mazur bought the farm in 1941. Later on, he recognized that his beef cattle farming was, abstrusely, a simple materials handling sequence in which men exerted energy where cattle, machinery or gravitational force could. Accordingly, he strove to design feed storage structures which could be mechanically supplied with crops from the fields and from which cattle could feed themselves.

Although the Fiddler's Creek project involves beef cattle and an integrated grassland farming program which anticipates and, in part, realizes intensive field crop fertilization (1,000 to 2,000 pounds of fertilizer to the acre), heavy annual crop yields (24 tons of green feed per acre), and exclusive mechanical harvest of crops (no pasture grazing), it is focused at three self-feeding structures in the 200 by 300 foot fenced feedlot of the farm. These buildings are a "quonset-in-quonset" hay drying, storing and feeding barn; a "tower-on-square," or Mazur, self-feeding silo; and a glazed steel, sealed silo adapted for direct feeding of cattle. Patent applications have been made on numerous features of the buildings.

The Hay Barn

The corrugated steel shell of the quonset hay barn is 40 feet square; within it is another 20 by 40 foot quonset. The interspace between them, shaped like a longitudinal half of a thick drainage tile, stores dried,

Reprinted by permission from The Rural New Yorker, New York City, N. Y.

chopped grass as hay. A tunnel through the small, inner quonset can be shut by sliding doors at either end of the barn. It is the only feedlot shelter for the cattle which eat from inside and outside the whole structure.

Grass is harvested from the fields with about 45 per cent water—a mower-crusher cuts it—and then it is trucked to the barn where it is elevated into the storage space by a forage blower. The water content of the grass is further reduced, to less than 20 per cent, by heated air forced through it with a fan driven by a gasoline engine. Heat from the engine increases temperature of air sucked over it by about 10 degrees. The air is channeled through canvas ducts into ports in the base of the barn and thence through spaces created by a wood lattice A-frame, part of the self-feeding apparatus. After moving upward through the grass, the air exhausts through vents at the top of the building.

The grass, when dry as hay, falls freely to basal feed mangers where steers eat it at will. Chain-linked, free-s w i n g i n g, two-by two-inch oak slats keep the hay from extruding into the barn and feedlot and also prevent entry of the cattle into the hay piles.

Two self-feeding wood hay barns also stand in the feedlot. They were the first built on the farm and although not as expensive, attractive or elaborate as the new steel barn, were effective enough to suggest and encourage further work and development in self-feeding storage barns. One of these barns can be sealed for ensiling crops.

The "Tower-on-Square" Silo

The "tower-on-square" structure is a cylindrical wood silo, 12 by 32 feet, supported on a square, cement-block concrete and steel frame six feet high. The functional feature of the structure is descent of silage by gravity as steers eat it away at the "square" feeding areas, five by 12 foot rectangular openings on the north and south sides. Structural peculiarities of the silo to make it self-feeding are (1) open bottom of tower silo, (2) six-foot high paneled A-frame of "square" to support, separate and shunt descending silage mass and (3) plywood panel to cleave the silage mass in two in the same plane as the ridgeline of the A-frame. As the silo is filled with green stuff, a partition within the silo is r a i s e d simultaneously with the silage surface level by a manual winch; a cleavage is thus made in the mass which becomes t w o half-cylindrical volumes. When the silo is opened for feeding, the A-frame assumes this cleavage and shunts silage outward to the steers as they eat and as feed descends

from the tower. When the silo is being filled, the "square" feeding areas are sealed with plywood reinforced with vertical two by six-inch pieces. These pieces later separate the feed areas into stanchions in which the steers can eat relatively undisturbed.

The wooden tower is painted black for absorption of solar energy to prevent silage freezing in Winter. Doors were cut into the silo before its principles were tested; there is no need, however, for the usual number of silo doors.

The Modified Glazed Steel Silo

The steel silo is glazed on the inside and it has a responsive rubber seal to prevent spoilage by oxidation. The silo is the standard basal unloading one on the market except that it has a slight conical shape, ie., diameter is 14 inches greater at the base than at the top 40 feet above, and its two lowest panel sections are removable. The silo rests on a circular, lolly column frame, six feet high, into which ensiled feed falls by gravity and from which steers feed. The feeding area of the silo is sealed for filling and storage by the removable steel plates.

At the center of the base of the structure is a cone which supports silage and shunts it to the periphery of the feed manger for easy eating. A steel tube suspended in the silo keeps the midst of the silage mass open for settling and separation about the cone; the tube is to this silo and cone as the panel partition is to the tower silo and A-frame.

Structures Are Not Perfect

There have been problems in developing both the system and the structures: neither is yet perfected. Changes and improvements are planned for the hay barn; Manager Barnhart would eliminate the inner quonset and switch positions of cattle and hay. The chief problem in the silos has been controlling descent of the silage. Early, rock-hard pillars of silage formed to stop further descent of the feed. Flaps and then pins at the bases of the silos proper tended to impede and control the silage settling and, with adjustments, now cause the bottom of the silage column to rupture down and outward at them to make the feed loose, fluffy and available.

Wastage of feed has been a problem, too; care needs to be taken to enclose the feed areas into mangers with rims to retain the feed. Piling of manure is not a serious problem if it is removed regularly with a power fork. A problem peculiar to the "tower-on-square" is concentration of feeding at the warm, south feeding area. The south half of the silage volume descends faster than the north

half, which then topples over and exposes itself to spoilage. East-west feed openings are a structural solution to this problem.

The self-feeding structures at Fiddler's Creek Farm have reduced feed and crop handling labor. In a 51-day feeding period from the "tower-on-square," only about five man hours of labor were required for the whole time; this was for opening the silo, adjusting the pins and cleaning out residue. The steel silo fed 30 steers for 76 days with only 19 man hours of work. Forty-four steers ate 70 tons of hay from the hay barn one Winter with less than four hours of labor required for the whole feeding period. Salt, steamed bonemeal and ground limestone are supplied to the cattle free choice; and they have a constant feedlot water supply.

Field Crop Work Intensified

Among the implications of the buildings and the no-pasture, self-feeding system are: need for increased crop storage space; elimination of field fencing; reduction of feed waste (no pasture trampling or fouling); intensification of field crop production; need for improved selection and marketing of beef cattle; assessment of soil, fertilizer, seed and crop values by steer weight and grade gain from free-choice feed; diversion and concentration of labor at fields instead of feedlots; adaptability to dairy farming; establishment of A-frame and cone utility as an agricultural principle; equalization of feed supply and livestock demand for it (as opposed to frequent imbalance of pasture feed and cattle appetites); T. D. N. loss in storage.

Manager Barnhart says that steers' choice of roughage has been about 85 per cent silage and 15 per cent hay; the steers eat about 70 pounds of silage a day. Molasses and corn and cob meal have been used as preservatives (because of stony fields at Fiddler's Creek, forage is cut by a sickle attached to the front of the harvester). Steers brought to the farm at 700 to 800 pounds, a weight suited to efficient roughage consumption, gain an average of one and a half to two pounds a day.

Some of the crops used for silage are nurse-crop cereal grains in milk stage, soybeans and sorghum, and corn planted with a grain drill (small "rounds" corn kernels—the top of the ear—are suitable for this). Corn and soybeans are sometimes drilled or broadcast in adjacent lots of the same field; the two crops are mixed by harvesting a swath of corn down the field and a swath of soybeans on the return trip with repetitions until the truck is full.

Big Change in Haymaking

The automatic-tie pick-up baler appears to be the most satisfactory way to make hay. . .

Condensed from The Agricultural Situation.

M. R. Cooper and Paul E. Strickler

In all sections of the country, farmers are turning from the older harvesting methods to the pickup baler method. Their wide acceptance of the pickup baler indicates that up to now it is the most satisfactory all-around method yet devised for handling hay at harvest time—a generally long, hard, and hot job on most farms.

This does not mean that all hay is harvested by the pickup baler method. Large quantities of wild and other hay in the dry farming areas are stacked with modern equipment and fed locally. Little of such hay is now baled at harvest time. Hay chopping has increased with the adoption of field forage harvesters which were developed mainly for harvesting grass and other silage crops. The use of buck rakes, stackers and blowers has increased in some humid area. And some hay in unmechanized areas still is handled by hand or with loaders, and with power forks for unloading.

But the big change in hay harvesting methods has come since the development of the automatic-tie pickup baler. In the comparatively short space of 14 years, 1939-1953, pickup baling increased from 2.5 percent of the total hay crop to approximately 66 percent.

Reasons for Popularity

Several reasons may be noted for such wide acceptance of the pickup baler.

Pickup baling does away with much of the hard, unpleasant work of handling a heavy, bulky crop in the busy season of hot summer. No physical effort other than that of handling the machinery is required while the hay is being cut, raked, and baled. Frequently the bales are delivered directly from the baler to a wagon or trailer where they

Reprinted from The Agricultural Situation, Washington, D. C.

are stacked by hand. The bales usually weigh from 40 to 60 pounds when baled for local consumption, and are easily handled by one man. They may be unloaded and stored in several ways, often being elevated to the mow by means of mechanical elevator or power fork. Storing the bales in helter-skelter fashion, often done, especially in humid areas, requires little or no labor. When stored this way better circulation of air is permitted and further curing is possible.

Pickup baling is a type of farm operation which enables small hay producers to benefit from the use of the more costly haying equipment. Once the hay is in the windrow, custom operators are available most everywhere for baling the crop at a stipulated charge per bale. Often, these custom operators are local farmers. Many do enough haying for others, in addition to their own, to make it profitable to own a baler.

A long work season and full use of the baler enables baler owners to harvest at a reasonable cost. In fact, charges per bale made by regular custom operators now are so competitive that the farmer with only a moderate amount of hay to bale cannot afford to own a baler, if costs alone are considered.

There are considerations other than baler costs, however, such as procurement of a high quality product by harvesting the crop well and at exactly the right time.

Automatic pickup balers save labor over the older harvesting methods. A ton of hay will require, on the average, about 3 man-hours when taken as long loose hay from windrow to storage with hay loader and power fork. This compares with only 2 hours if handled with automatic pickup baler and unloaded with power fork or elevator. And if the hay is stored as long loose hay, then baled, and loaded for shipment, about 6 man-hours per ton will be required as against 2 hours when taken direct from windrow with pickup baler and truck. These comparisons are for harvesting where baling is popular. They do not apply to the dry farming areas where large tonnages of wild and other hay continue to be stacked in the open with modern buck rakes and stacking equipment.

It is true that farmers who depend on custom balers do not always get their hay baled precisely when they most desire. This may be one reason why sales of balers have been increasing more rapidly than the quantity of hay baled.

Baled hay is easily and quickly handled, stored, and fed. Consequently, a large tonnage can be put under cover in a short time, a desirable feature of hay harvest in humid area. Once the

hay is cured, an average modern automatic baler can bale 3 to 3.5 tons of hay per hour, and some of the large balers can bale much more. If it is hauled to storage as it is baled, 30 to 35 tons can be put under cover with a normal crew and baler in a day's operation.

Baled hay can be stored quickly and with a minimum amount of labor in hay lofts previously used for storing long loose hay. Sometimes, however, it will be necessary to strengthen the supports of such mows or to be careful that they are not overloaded.

But baled hay need not be stored in conventional mows. It can be stacked in the field and covered with tarpaulin, or stored in an open shed with a good roof. In the dry farming areas, the bales may be left in the field in piles or scattered about for feeding during the winter. Sometimes baled hay is so stored in a feeding shed that the space it occupies is gradually taken over by the animals as the winter season progresses and the hay is consumed.

Although pickup baling has been the primary answer to the efforts of researchers and experimenters to find a better and easier way of handling our hay crops, chopping of cured or semi-cured hay has increased along with development of the field forage harvester. More of the potential hay crop is put in silos. Barn driers with air blowing fans are being installed in places where the curing of hay often is a problem. Machines that will crush the stems of the coarser hay plants and thereby reduce the time required for sun curing are being tried out. Artificial curing by heat still is being experimented with. Improved rakes, blowers, and elevators speed up the slow job of haymaking and help to improve hay quality by lessening weather damage and loss of leaves.

Thus strides have been made. But men continue to search for more economical ways of handling just about the largest of all farm crops.

When Sorghums Are Damaged By Drought and a second growth appears after sorghum has had some moisture, this new succulent growth may be dangerous to livestock. New growth is partially poisonous after the first frost because hydrocyanic acid may be present in the new growth, and this acid is extremely poisonous to livestock. Farmers are cautioned against turning livestock onto the new growth until it is known whether or not hydrocyanic acid is present.

HAVE YOU BEEN LEAVING PIGS ON SOWS TOO LONG!

Here are some of the advantages of using a new program for pig raising. . .

Condensed from Successful Farming.

Weaning pigs at an earlier age is probably the newest pig - raising development afoot these days. Some of the advantages of this system are:

- You'll save sow feed. Sow needs 6 pounds feed per day during gestation, 12 pounds during lactation.
- Sow's milk flow goes down rapidly after first 3 weeks of nursing. Pigs sometimes "tug for nothing."
- Better pig starters used today save you money in the long run because the pigs gain so much faster.
- Weaning pigs earlier reduces the hoghouse-cleaning chores. Also, less housing is needed for the pigs.
- Getting pigs off the sow earlier reduces the amount of weight lost by the sow during lactation period.
- Sow can be rebred sooner if pigs are weaned earlier. Or, sow can be marketed in better condition.
- Biggest advantage is probably the fact that the pigs weigh a good deal more at the end of 8 weeks.

With the use of antibiotics, new creep feeds, and substitute sow's milk, pigs are being taken away from the sows as early as 2 days of age, or after they have received colostrum milk. Some pigs are left with the sow a week, others 2 weeks, 3 weeks, and so on.

From results so far, it appears that the hoped-for success of substitute sow's milk may now be at hand. But the trick that makes substitute sow's milk really work is the **dry feed** you give the pigs along with the milk. Even if you don't want to use a substitute milk, feed a **good** creep feed. Use the best feed you can get, even if it costs a bit more than a poorer ration.

The one single factor in this new idea of weaning pigs earlier is the feed you put before the

Reprinted by permission from Successful Farming, Des Moines, Iowa

pigs when the pigs are a week old, regardless of whether or not you leave the pigs with the sow for 1 week or 3. To get the best results, little pigs should have a chance at choice, appetizing creep feeds or starters as soon as they will eat. Pigs will begin to nibble dry feed at 7 days of age.

Here is a pig starter used by Doctor Catron, University of Iowa with good results:

	Pounds
Table sugar	300
Yellow corn (ground coarse)	350
Rolled oats	800
60 percent fish meal	50
Dried whey	50
Soybean oil meal	400
Ground limestone	20
Steamed bonemeal	30
Salt	10
Trace mineral mix	4

To this ration, add a vitamin-antibiotic pre-mix as recommended by the manufacturer. There are a number of good pre-mixes of this type on the market now. Self-feed this pig starter with shelled corn in a creep. Make sure the pigs have plenty of water.

At Iowa State, these results were obtained using the creep feed mentioned earlier. Pigs weaned at 1 week and receiving substitute milk plus the new-style creep feed took only 1.5 to 1.8 pounds of feed per pound of gain. Pigs, on an old-style creep feed, ate 2 to 2.5 pounds of feed per pound of gain.

The addition of sugar to any creep feed will coax the pigs to eat more of it.

Just what age is best to take pigs away from the sow is still a decision only you can make. It depends somewhat on your housing facilities, health of sows, health of pigs, and whether or not you want to rebreed your sows or sell them within a short time after farrowing.

As some of you know, substitute milk blew into the hog-lot in a hurry, and in some cases blew out again just as fast. The milks still had some "bugs" in them. But now, practical substitute sow's-milk formulas have been worked out. The use of antibiotics has contributed to the success of these formulas.

A number of farmers are already weaning pigs early. In 1952, Lawrence Meyer, Spring Grove, Minnesota, tried early weaning on a small scale. He took a litter of 18 pigs away from a sow at 4 days of age. The pigs were fed substitute sow's milk and averaged 46½ pounds at 56 days of age. The heaviest pig weighed 342 pounds at 180 days and the lightest weighed 266 pounds.

J. W. Thompson, Princeton, Minnesota, took 352 pigs away from 33 sows at 10 days of age. He raised 347 of the 352 on substitute sow's milk plus a good creep feed. The pigs averaged 35 pounds at 6 weeks of age. The 33 sows were sold 14

days after farrowing without any dockage.

More research is needed to find out just when is the best time to wean pigs. If farrowing stalls and pig guards are used, and not too many pigs are lost by being crushed or layed on, it seems that weaning at 3 weeks may not be too far wrong. However, Iowa State has had excellent results, when pigs were taken from the sow at 1 week of age.

Early weaning can be used for the entire pig crop or for only a few of the pigs. Some farmers have successfully weaned their pigs piecemeal. They take the strongest pigs away from the sows at about 3 weeks of age and wean the rest at 5 or 6 weeks.

It appears now that we're gradually whipping that old pig-raiser's problem of getting pigs from farrowing to weaning age in a hurry. There'll be more developments in the future that will make this job easier yet.

Symptoms of Cattle Choking

Failure to keep cattle out of orchards, corn fields and gardens after the fall harvest may result in costly losses from choking on such crop residue as ear corn, potatoes, cabbage, beets and apples, says an Oregon animal husbandry specialist.

John Landers explains that "choke" is not uncommon in cattle because they naturally swallow food the first time without chewing it much. Drooling and bloat may be the first symptoms when a cow is choking, says the specialist. He adds that affected cows often hold their heads low with necks stretched out. Coughing, gasping and open-mouth breathing are also common indications of choking.

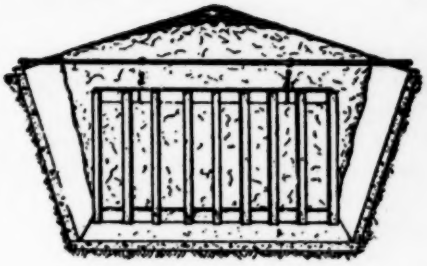
Affected animals will make no attempt to eat or drink. Since symptoms are similar for bloat, bronchitis, wooden tongue and other diseases, an immediate diagnosis is necessary to determine the trouble.

"Failure to obtain competent aid immediately can be costly," Landers states. Badly choked cattle are likely to die of bloat within a short time when the lodged object prevents normal escape of stomach gases.

Veterinarians may use drugs to relax the animal's throat muscles so the obstructing object can be removed more easily. Instruments may be used in other cases to obtain relief. Landers reports surgery is sometimes necessary in extreme emergencies to relieve the bloating.

Oregon State College

GRASS SILAGE in Stacks and Trenches



Step-by-step how to make grass silage and store it economically. . .

Condensed from a University of Illinois Bulletin prepared by the Legume-Grass Committee.

Why Make Grass Silage?

Making grass silage will help you in two ways to get a good supply of roughage: It is usually a surer way than haymaking to save your first hay crop. And it's a good way to save some of your surplus spring pasture to use later.

Making legume-grass forage into silage is the best way to save the protein, too. The U. S. Department of Agriculture reports that making forage into silage saves 84 percent of the protein in the crop. Barn-curing the hay saves 76 percent; field-curing saves 69 percent when the hay is dry and only 49 per cent when it has been rained on.

Why Use Stacks or Trenches?

By using a stack or trench, anyone can have silage. It's easy to make and to feed. And you can make **good** silage in this way.

University of Illinois tests on 27 grass stacks showed the following results with stacked silage. Silage in trenches would be as good or better.

1. It's possible to get by with as little as 5 per cent spoilage, but it can run as high as 40 percent. The average is between 10 and 15 percent.

2. The protein content averaged 14.5 percent of the total dry matter. This amount varied with the crop, of course.

3. Two-thirds of the samples

Reprinted from a bulletin published by University of Illinois College of Agriculture, Urbana, Illinois

were acid enough to rate as good silage. (pH of 5.0 and below).

4. The average carotene value of the good silage was 8 to 10 times that of the poor silage. The good silage was twice as good as "good" hay.

5. The moisture content varied from 65 to 83 percent. The too-dry silage had a poor color and a burnt odor. The two-wet silage had a foul odor.

How Is Grass Silage Made?

It's not a hard job to make good silage from grasses and legumes in a stack or trench. But you have to take some care in doing it. These steps have proved to be successful:

1. Cut your crop at the stage when it would make the **best** hay.

2. Use a ½-inch cut for the silage.

3. Pack the stack or trench **evenly** and **thoroughly.**

4. Don"t use a preservative for a mixture of grasses and legumes that you store in a stack or trench silo. It's nearly impossible to mix the preservative with the silage. And spreading the silage will dry it fast enough anyway.

5. Windrow, chop, and haul the forage as soon as you can if you don't chop directly from the stand. One big problem is to keep forage from drying out too much.

Which Method Is Best?

You can make good silage in a trench, surface trench, semi-trench, or stack. The method you choose will depend on your own conditions.

You can make a **trench silo** easiest on sloping ground that falls 5 to 8 feet in 100 feet. It must drain away well from the lower end.

You can either line the trench with concrete or simply use it as it is. But if you don't line it, the walls are likely to cave away in a year or two, and the trench will soon get so wide that it won't meet your needs.

If you don't use concrete, make your trench at least 10 feet wide at the bottom. Slope each wall about 6 inches per foot of height. For example, if the trench is 10 feet wide at the bottom and 6 feet deep, it will be 6 feet wider at the top than at the bottom.

Slope the wall at the high end of the trench about the same as the side walls.

Build the floor high in the middle, like a roadbed, so that water will drain out along each wall. The floor will need to slope about 4 feet per 100 feet of length to give you good enough drainage.

A "roadway" down the center of the trench, made of 6 inches of rock, may make feeding easier. But in very muddy weather it won't do much good.

Some farmers make a roadway out of corncobs as they empty the trench.

A bulldozer is probably the best equipment to use in making a trench silo. But you can make one with a tractor scraper.

A trench silo lined with concrete is better than a raw trench. If you line the trench, make it at least 10 feet wide at the bottom. For the floor, use about 5 inches of concrete reinforced with welded steel wire over a coarse rock fill 3 inches deep.

Slope the floor at least 2 feet per 100 feet; 4 feet would be better. Make it high in the middle, like a roadway, so that the water will drain out better.

Slope the walls 3 to 4 inches for each foot of height, and reinforce the concrete with welded steel wire in the same way as the floor. Build the walls 3 or 4 inches above the top of the ground to keep water from running into the silo.

Be sure the walls are tied to the floor. Do it with the reinforcing.

The **easiest way to fill** a trench is to dump the silage over the wall at the upper end until you can drive across it. Then drive through from the upper end.

You can self-feed from the trench unless it is not lined and gets too muddy. You'll need 4 to 6 inches of manger space for each animal. You can hang a manger gate from a rail across the top of the trench. Slide the rail back as you feed the silage. Then all you'll need to do will be to clean out the manure so that the water can drain away.

A manure loader is the next easiest way to feed out the silage.

If the trench is unlined and the bottom is too muddy to use a tractor, you can use a grain elevator to load a wagon at the side of the trench.

If you don't have enough slope for a regular trench, you can build a **surface trench silo.**

First make two parallel dirt banks right on top of the ground. You can either haul in the dirt or bulldoze it up.

These two banks will serve as the sides. Make them higher in the center than at the ends—say, 10 feet in the middle and 3 feet at the ends. The height will depend on how much silage you have.

Put plenty of slope on the outsides of the banks. Each completed bank should be 2 feet wide at the base for each foot of height.

After the dirt banks have settled, clean out the inside and line with concrete. Slope the inside walls 3 to 4 inches per foot of height. You can put the dirt from the inside on top of the banks. Then make the concrete lining in the same way as

you would for the regular trench.

To fill a surface-trench silo, drive through it to unload each load. Put in enough silage to make it higher than the walls after it settles. Otherwise water will go down through the stack instead of draining off the edges.

You can feed from the surface trench in the same way as from a trench except that you can probably use both ends.

The semi-trench is another type of silo you can use if you don't have quite enough slope for a regular trench.

Make the semi-trench by cutting down 1 or 2 feet below the top of the ground. Use the dirt to make rounded banks along the sides. Be sure to smooth and pack them well.

Make the trench bottom high in the middle, like a roadway, so that water will drain along the sides, and slope it lengthwise in the same way as the regular trench. The bottom should be 16 to 18 feet wide.

You won't need to line the semi-trench, although it may pay you to pave the floor. Use the same type of floor as in the regular trench.

If you don't pave the floor, you can make a roadway out of 6 inches of limestone rock. Or you can use corncobs as you empty the trench.

To fill the semi-trench, drive into it and unload. Be sure to keep the silage packed down. When it reaches the tops of the banks, spread it out over the top so that water will drain off the outside. To improve drainage, pile the silage higher in the center than at the ends.

You can plan on silage settling to two-thirds or three-fourths of its fresh-filled height.

If the floor is not muddy, you can self-feed from the semi-trench. Or you can use the manure loader.

Usually a silage stack or stack silo is considered an emergency method of saving a good hay crop. But you can keep spoilage down to the point where a stack will provide dependable storage.

Build your stack where drainage is good. If the ground is flat, build up a dirt base. If you want to use the stack year after year, build a concrete base. Use 5 inches of concrete over 3 inches of coarse rock. You may find other uses for the base when there is no stack on it.

A stack needs to be large—18 or 20 feet wide—or there will be too much spoilage in relation to the amount of good silage you get. Make your stack as long as you need to.

You can build a silage stack without supporting walls if you're careful to keep the sides straight. You'll have trouble at first keeping it to the width you started with. Keep scraping the

sides down and throwing the silage back on top of the stack until it is 2 or 3 feet high.

Fill the stack just as you would fill a semi-trench or a surface trench. It will take an extra man with a fork to keep the top level and the sides straight. Packing with a tractor is a somewhat dangerous job, and of course you can't pack the edges that way.

You can make stack building easier and safer by building temporary side supports. But be sure to take them down when you finish the stack, or they will cause water to run into it. Here's how to make them:

Set posts 8 feet apart along each side of the stack site. Put them 2½ feet into the ground. Leave 4 or 5 feet above ground at the ends of the stack and the height of the stack in the center. Brace each post from the side.

Nail two boards along the inside of the row of posts. Fasten snow fencing to these boards.

With these sides you can use a tractor and a manure loader to level the stack and pack it firmly, even along the edges.

You can cut down spoilage by putting some greener forage on the top of the stack. Packing every day for a week after you fill it will also reduce spoilage. Take the walls down as soon as you finish packing.

In feeding from the stack, you can set up bunks alongside it and fork the silage into them. Or you can rig up some manger gates along the ends and sides and let the cattle feed themselves.

If you self-feed, don't plan to have your settled stack more than 6 feet high. That will be about 9 feet at filling time.

A rectangular stack may suit your needs better than a round or oval one. To make a rectangular stack, you will need to use a blower or a grain elevator. You can build a stack 20 by 30 feet with one set of the blower.

Mount the blower at least 30 feet high, and use flexible pipe to reach down to the top of the silage as you fill. With this arrangement, a man on the blower and one with a fork can build a good stack.

If you use a grain elevator, you'll need more help on the stack to spread the silage.

This type of stack will settle more after filling than one that is packed with heavy machinery. To insure enough packing to prevent too much spoilage, make the stack at least 12 feet high at filling time.

If you will set up a tall post at each corner, it will help you keep the sides and ends straight.

In topping off, simply round off enough to be sure the water will drain off.

Should Silage Be Covered?

More farmers figure that it costs more to cover silage than the amount you save would be

worth. Uncovered, the top 5 to 8 inches will probably spoil even if you do a good job of filling.

A good job means packing the silage evenly, mounding it up in the center, and piling it out over the walls. Water will then drain from the top of the silage to the outside of the silo.

You can cover silage and not have any spoilage if you think it's worth it. Three inches of either dirt or limestone makes a good covering. Moisture-proof paper weighted down with either dirt or limestone will also work.

Is Packing Hard to Do?

Packing isn't a tricky job to do. But it's important to pack silage in stacks and trenches as evenly and as well as you can. Trucks, wagons, and tractors will all do a good job of packing. A wheel tractor, driven slowly, will do a better job than a track-laying tractor.

Be sure to avoid spinning the wheels of a tractor or truck. The low places it causes catch water and cause spoilage. To avoid spinning, hook on another tractor.

How Much Silage Will I Get?

By weight you'll get 3.5 times as much grass silage as hay. In other words, a field yielding 1½ tons of hay to the acre would yield about 5½ tons of grass silage.

A cubic foot of grass silage will weigh about 35 pounds.

How Much Silage Will I Need?

Following are the amounts of grass silage needed by different kinds of livestock. They are given in pounds per day **per 100 pounds of weight.**

	Lb.
Dairy cow (over 6 months)	5
Beef cow, Stocker calf, Stocker yearling	4-5
Fattening calves, Yearlings, Two-year-olds	2 or less

New Drug Boosts Appetite Of Sick Cattle, Sheep

A new way to pep up the appetites of sick cattle and sheep is to feed them "Profloran," a product which stimulates growth of bacteria in the paunch.

Scientists of the Jensen-Salbery Laboratories, Inc., of Kansas City, Mo., which makes the product, say that the supply of bacteria gets pretty low in the paunch of sick ruminants. Feeding "Profloran" is like top-dressing a field with fertilizer to boost plant growth, they say. Bacteria increase, and work on breaking down the feed the animal eats, and this gives it an appetite.

You can get the product from your veterinarian.

Farm Journal

Eggs Automat Style Sell Fast

The new Egg-o-Mat offers self-service to the customer and results in increased sales and a saving of labor. . .

Charles L. Stratton

Condensed from New Jersey Farm and Garden.

How would you like to load up your roadside stand with eggs in the morning, forget about customers and go on with your poultry chores, then collect the profits at the day's end?

A Connecticut poultryman, does just that. Customers get their eggs automat-style from a self-service dispenser — even make their own change — yet Henz Braunsburg never loses an egg and he's never "short-changed!"

Self-service got its start at the Heinz Poultry Farm in Hartford County, Conn., with a small soft drink ice box on the front lawn that held 30 dozen eggs. Customers made their own change. Losses amounted to only 15 cents a year, but in winter, when the customers were allowed to help themselves in the egg room, Heinz found that the sight of so many eggs was too much of a temptation and eggs started to disappear.

A visit to a New York automat gave Braunsburg an idea for an egg retailer. It took time to find a firm that would make what he wanted at a reasonable price, but it was done and the Braunsburgs built a small roadside stand for their new Egg-O-Mat.

The results were well worth the effort. The electrically operated machine holds 60 dozen eggs and customers can help themselves 24 hours a day. The Braunsburgs generally leave the light on inside the stand until 10 p.m., but they have seen customers drive up at all hours of the night, switch on the light, get their eggs, switch off the light and drive away.

Reprinted by permission from New Jersey Farm and Garden, Sea Isle City, New Jersey

Eggs are put up in 4x6 or 3x4 cartons. The machine has a foolproof coin box the same as a pay telephone. Any amount may be inserted from five cents up to $1.00. Nickels, dimes, and quarters are used. Both the amount to be deposited and the egg price is listed. The customer has the choice of four egg sizes. Change is taped to the top of the egg carton.

"Sales are slow on Monday and Tuesday," says Braunsburg, "but pick up toward the end of the week with a Saturday and Sunday peak." Starting on Thursday and through the week end the Braunsburgs often fill the machine with eggs three and four times daily. "One Wednesday," Braunsburg recalls, "the machine was filled at 9 a.m. and by one in the afternoon we had sold 36 dozen."

Only $25 has been spent for advertising. Ads were placed in local papers twice and space was purchased in the telephone directory. In the first five months the Braunsburgs had 200 new customers and their retail sales doubled to over 12 cases weekly.

The Braunsburgs figure on a seven cent markup per dozen. Eggs sell so fast in summer that other than a fan no refrigeration is required. A strip heating cable is used in winter to keep the eggs from freezing. Electric operating costs are about 20 cents a month, and the Egg-O-Mat sells for about $450 and up.

Veal Market Could Save Dairy Income

Dairymen worrying about the milk price drop might do well to take advantage of a good veal market. And at the same time they'll be doing something about the milk surplus.

Donald L. Stark, Michigan agricultural economist, points out that a choice prime veal 200-pound calf will bring around $60 to $65.

If you sell a day-old (or more) calf, you'll get from $12 to $15. You might buy a calf for the same price. So figure your profit this way: $60 for a 200-pound veal calf minus the price of a day-old-calf—$15—leaves $45 for approximately 1,000 pounds of milk it takes to put another 100 pounds on a 100-pound day-old calf.

That's $4.50 per hundredweight for your milk—much better than most dairymen can do with milk selling at 75 per cent of parity.

Michigan State College

Ewe Testing Program

New program shows big variation in quality of ewes on farms. . .

Condensed from The Farmer.

SIX Minnesota sheep breeders are upgrading their flocks through a ewe testing program which has revealed some very large differences between the productivity of breeding ewes. For example, the better of two groups of ewes produced 36 more pounds of lamb per ewe at the 120-day weighing period than the poorer group. That this was no accident was proved the next year when the same group of ewes outdid the others by 22 more pounds of lamb per ewe.

Under test are 46 Columbia ewes, 42 Hampshires, and Shropshires, and their offspring. Last season, records were kept on 162 lambs.

Ewe records include age, weight of fleece, wool grade, and general information on quality of wool. Also included is the ewe's classification as excellent, very good, good, fair, or poor. County Agent Dick Radway does the classifying in the fall.

Lamb records include tag number of the lamb, sex, tag number of the sire, and birth date. Lambs are weighed at birth, again at 90 days, and at 150 days. These records also are entered in the records of the ewes.

Commenting on the record keeping work, Joe Freeman, vocational agricultural instructor at Roseau said: "Records such as these are an invaluable guide to the purebred breeder. They help him in his own improvement program, and thus in satisfying customers who buy rams from him.

"And to the owner of a grade flock buying a purebred ram," Mr. Freeman continued, "the records are assurance that he is getting the kind of ram for which he pays. Most rams are bought according to type. These records prove that type is not enough."

Also shown by the records is that birth weight of lambs is an indication of their ability to gain. Lambs weighing 10 to 13 pounds at birth weighed 95

Reprinted by permission from The Farmer, St. Paul, Minn.

pounds when they were 120 days old. Lambs weighing 7 to 10 pounds at birth only weighed 80 pounds when they were 120 days old. Moreover, the ewes producing the largest lambs were the best wool producers by about three more pounds per fleece.

Finish Beef To Make Top Market Price

Cattle feeders will find it an advantage to put a good finish on their feeder cattle this season because of the substantial price differential between finished and unfinished cattle in the same grade. George A. Branaman, Michigan animal husbandman, urges the feeding of plenty of protein supplement because cattle not getting enough are lacking proper finish.

Although protein supplement is slightly higher priced than last year, he stresses, the benefit in the form of finished cattle is more than worth the expense. Branaman also advises shopping around for the best buy in protein supplement of similar quality. For instance, he points out, cottonseed meal is at an attractive price in comparison with some others.

Michigan State College

Methoxychlor-Sprayed Hay Is Safe for Dairy Cows

Pasture and grassland sprayed with recommended amounts of the new insecticide methoxychlor for insect control will not harm dairy cows that feed on the treated forage nor will it be excreted in their milk, according to experiments carried out by the U. S. Department of Agriculture at Beltsville, Md.

In one of a series of experiments designed to test the effects of various new organic insecticides, alfalfa hay containing methoxychlor residues ranging from 16 to 109 parts per million was fed to dairy cows for periods of 40 to 80 days. This concentration of methoxychlor equals the maximum amount likely to be encountered on forage treated for insect control. Samples of milk from the cows were analyzed at 10-day intervals. No methoxychlor could be detected in the milk.

In another series of tests, methoxychlor was fed at much higher concentrations, and compared with normal residues of DDT, which do show up in cow's milk. Approximately 100 times as much metoxychlor as DDT must be fed for the insecticides to be detectable in the milk of dairy cows. Similar residue experiments with other new insecticides such as dieldrin and heptachlor are still in progress.

West Virginia University

Look What They're Doing To The Cow Barn

Separate buildings in a loose-housing system do separate jobs and replace the all-inclusive dairy barn. . .

Condensed from The Farmer.

"I used to tie cows in the barn and carry feed and water to them, and milk and manure away—just like a lot of other farmers. But when I had a chance to build, I went the other way.

"I put hay, feed, milking parlor and sleeping quarters in separate buildings. Now the cows work for me."

That was Myron Clark, a forward-thinking dairyman as well as Minnesota's state commissioner of agriculture, speaking. He was talking about the latest step in a long-time cow barn evolution to free dairy farmers from manure forks, silage buckets, and milk cans.

Originally, the best barns were all-inclusive. Many still are, but everything was under one roof—hay, bedding, feed, milk room. Cows were put into stanchions in early winter and there they stayed until spring. With them came problems of ventilation, sanitation and a mammoth job of carrying buckets, baskets and forks full of manure, milk and feed.

Then came loose housing. Cows slept in one place and were milked in another. But they were still under one roof. Ventilation was still a problem. Daily chores still had to be done daily, although the load was lighter.

Now comes the next improvement—separate buildings designed to do separate jobs. One is for loafing, where cows sleep undisturbed. Another is for hay, where cows eat when they feel like it. Last is a combination holding pen-milking parlor, designed to get milk from cows as quickly, easily and hygienically as possible.

Mr. Clark has a set-up like that. So does Joe Kargel, Washington County, Minn., dairyman. So does the St. Cloud Reformatory farm, first in Minnesota to try the new idea. So do a few other dairymen.

Plan has four advantages

What did they gain by spreading dairy plants out? In a nutshell, this:

- Savings in labor.
- Savings in cost.

Reprinted by permission from the Farmer, St. Paul, Minn.

- Greater flexibility.
- Freedom for cows.

Savings in labor was the biggest return, followed closely by reduction in building costs. Mr. Clark and Mr. Kargel figure they reduced construction costs by 40% under the price tag of a conventional barn of equal capacity. In addition, they chopped chore time in half and transferred a lot of labor from hand to machine.

"Four main labor factors plague a dairy farmer," points out Mr. Clark, "the feed sack, the pitchfork, the silage basket and the milk can.

"We threw away the feed sack. We hung up the pitchfork. We got rid of the silage basket, and we're doing away with the milk can."

How? Simple.

Last fall, Mr. Clark put up three buildings—a round-roofed loafing barn, a pole-type hay shed and a pole-type heifer shed. He laid them out in a triangular pattern fitting them together with a milking parlor-milk room unit built two years ago. He laid out his buildings so animal traffic revolves around the feeding area—from milk parlor to hay shed to loafing area or heifer shed.

First, the loafing barn. Built "96 by 40 feet without a post," it has calf pens in one end and baled bedding in the other with nothing between. No feed racks; no water cups. Cows go into the barn to sleep. They lie down; they aren't distributed by others eating or drinking. The barn is open at one place on the south, eliminating the ventilation problem. Manure is allowed to accumulate, except for cow pads which are picked up daily to reduce bedding requirements. Bedding the loafing barn and the heifer shed takes 30 minutes per day for 39 head. Manure will be taken out once, in spring, by a mechanical loader.

Exit the manure fork.

The hay shed, built of poles with mangers on both sides and drive-through gates on each end has a roof with long overhanging eaves to protect cows while they eat. Able to hold 1,500 bales, it can be filled by driving through with a rack until the pile builds up. Then bales can be hoisted in with an elevator. Feeding the 39 head is a 15-minute daily job of sliding bales over to the mangers and breaking them open.

Exit the hay fork.

Above Ground Trench Silo

Alongside his cow and heifer lots, separated so young stock need not compete with bigger animals at the feed bunk, Mr. Clark built an aboveground trench silo. Made of poles set in the ground and faced with lumber from an old upright silo, his trench silo cost $308, "and

every bit of the labor was hired."

The silo is a drive-in type, so located that a tractor equipped with a silage scoop can drive in, pick up a load, back out and swing over to specially designed bunks along the wooden, cow-lot fence and dump the silage. Silage feeding time — 15 minutes per day for 39 head and all done mechanically.

Exit the silage basket.

Overhead bins store grain for cows above the milking parlor. Gravity chutes carry grain to each parlor stanchion where two turns of a crank augers out each cow's portion. As soon as construction is complete, grain will go into the over-head bins via an elevator.

Exit the feed sack.

Milk now goes by pipeline from milking parlor to milk room where it is canned off. As soon as possible, a bulk cooler will be installed.

Then, exit the milk can.

Mr. Clark has cut daily chore time squarely in half. Gerald Pingree, farm manager, now spends four hours a day "doing the daily jobs that go with a herd this size. In the old stanchion barn, with about the same number of cows, it took me eight hours a day to do the same work."

The old stanchion barn, still standing between the loafing barn and the milking parlor, will be torn down. Half the concrete floor now under it will be used for a calf exercise yard off one end of the loafing barn. The rest of the old floor will become an open holding area for cows going into the milking parlor.

So much for labor.

As to costs, Mr. Clark and Mr. Pingree originally planned a new stanchion barn. Then they got to figuring. When they put their pencils down they had switched to separate buildings. Why? "My entire set-up cost only 60% of what a conventional barn big enough to handle the same number of cows would have cost," says Mr. Clark.

His round-roofed loafing barn, in which, incidentally, he veered away from pole construction to get rid of center posts, cost "less than $400 more" than would a pole barn of similar size.

Joe Kargel found similar savings in labor and construction.

Mr. Kargel put up a 40 x 100-foot hay barn with built-in hay drying ducts and fan. Alongside it he built a loafing barn. At the apex of the triangle, so located as to break winter winds, he put up a combination building having a holding area on one end, milking parlor and milk room in the center and calf barn on the other end.

Cows line up in the holding area at milking time, move through the milking parlor,

which is equipped with four alleys with two stalls in line in each, then go back outside through a small vestibule in the center of the building. Once outside, they stop for a drink from an insulated, heated tank, move over to the hay barn, then on to the loafing parlor.

Manual labor has all but been eliminated. Cleaning the holding area would be a ten minute job, if it were done daily. Instead children do it each weekend. Cleaning the milking parlor takes 15 minutes per milking, cleaning milkers and pipe lines, another 15 minutes. Bedding the loafing area—30 minutes a day, plus two or three days' work next spring with a tractor loader to clean the manure pack.

Even less work is required at the hay barn.

Round roofed and completely open on both ends, it has push-type mangers through which cows can eat right through the barn. Built in two sections across each end, the mangers can be slid forward as cows eat, thus allowing them to chew their way in under the roof and save Mr. Kargel the work of pitching hay at the same time.

Where Mr. Kargel used to spend four hours a day caring for 40 head in a conventional barn, he now does the same job in one hour and takes care of almost twice as many cows.

He, like Mr. Clark, originally planned to build a big, two-story stanchion barn, even going to the point of drawing blueprints. Then he started comparing costs. The result? "This setup," he says, "was $8,000 cheaper than a comparable conventional barn big enough to house 50 milk cows and handle 30 young animals.

"What's more, I've got more flexibility. With this arrangement I can milk from 30 to 70 cows without making a basic change."

Mr. Pingree stressed the same point. "We don't need to have a good cow crowded out by a heifer with this milking parlor and loafing barn. Before, in the stanchion barn, we had no place to put extra cows."

What does such a dairy unit cost? Very roughly, accommodations for 35 to 40 cows, laid out along the lines of Mr. Clark's or Mr. Kargel's plant, should run in the neighborhood of $12,000. That would include loafing barn, hay barn with concrete feeding apron, bunker type silo and milking parlor. It would probably cover milking machine costs, but might not stretch over bulk coolers. Using home labor, which can be done in some of the construction, might shave the overall bill.

NEW WEED KILLERS FOR PASTURES

Chemical controls for weeds prove a valuable aid for the farmer. . .

Condensed from New Jersey Farm and Garden

some recent experiments.

Secret of Chickweed Control

W. H. Mitchell and C. E. Phillips, of the Delaware Experiment Station, reported that most of the injury to pasture plants due to competition from chickweed occurred early in seedling development. Chloro

main thing, he said, is to put on the chemical before the chickweed is matted. Later applications mean repeated treatments will be necessary and more of the chemical will be needed to get control. Earlier treatment helps the fall-seeded grass and legume seedlings to get a better start, too, so they

Reprinted by permission from New Jersey Farm and Garden, Sea Isle City, New Jersey

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NEW WEED KILLERS FOR PASTURES

Chemical controls for weeds prove a valuable aid for the farmer. . .

Condensed from New Jersey Farm and Garden.

M. A. Sprague, NEW JERSEY EXPERIMENT STATION

KEEP weeds from getting started in your pastures!

If there is a single rule that can be applied to this new field of chemical weeding, that apparently is it. At the eighth annual Northeastern Weed Control conference, time and again, that rule cropped up.

Chemical controls are here—or ready for commercial use—on such pests as chickweed, yellow rocket, pigweed, quackgrass and bed straw in alfalfa, clover, bromegrass and trefoil seedings. Here are highlights of some recent experiments.

Secret of Chickweed Control

W. H. Mitchell and C. E. Phillips, of the Delaware Experiment Station, reported that most of the injury to pasture plants due to competition from chickweed occurred early in seedling development. Chloro IPC, at one to two pounds per acre, or dinitro sprays at one pound per acre, applied in a test December 18, killed off all the chickweed tops. However, there was considerable regrowth by April 1. They also noticed some injury to the forage seedlings.

Secret of good control for chickweed is to spray early in the fall, observed Dr. R. J. Aldrich, of Rutgers. Late October or early November after an August seeding is a good time. The main thing, he said, is to put on the chemical before the chickweed is matted. Later applications mean repeated treatments will be necessary and more of the chemical will be needed to get control. Earlier treatment helps the fall-seeded grass and legume seedlings to get a better start, too, so they

Reprinted by permission from New Jersey Farm and Garden, Sea Isle City, New Jersey

will produce more the next year.

Dr. A. O. Kuhn had the same experience in Maryland, and in other trials got up to 15% increases in yield from old stands of alfalfa treated for chickweed.

MCP for Yellow Rocket

Two-year trials in New York show that MCP at one-quarter to one-half pound per acre looks very promising for controlling yellow rocket in new legume seedings. Again fall sprays should be put on early, when the weed is in the rosette stage. Injury to the legume increased with advanced stages of maturity—particularly alfalfa.

Preliminary trials show some new chemicals such as 3,4-D and 4-chloro phenoxy acetic acid have a great deal of promise for killing some of the common weeds in fall seedings of alfalfa, ladino and red clover.

Bed straw is a new weed which is giving trouble mostly in trefoil stands in Northeastern states. A preliminary test of nine chemicals by Dr. Stanford Fertig, of Cornell, found 2,4-D and MCP will kill the weed. Unfortunately, they also kill the trefoil that may be growing with it.

Pasture Renovation Chemicals

Pasture renovation, using TCA to make seedbed preparation quicker and easier, still looked good where plenty of rainfall was available. In areas which were very dry in July and August, the chemical stayed in the soil and killed new seedings planted 35-40 days after spraying.

* * *

Several years of experiments conducted by Purdue university agronomists indicate that 100 pounds of fertilizer per acre placed in bands by the corn hill will produce as much crop increase as 200 pounds of the same fertilizer banded for drilled corn.

* * *

A new experimental chemical called Dalapon looked very good for use in renovations. It is easier to handle than TCA and as little as six to eight pounds per acre is all that is needed to kill a heavy sod. As it is put on the foliage instead of the soil there is much less danger of injury to the new seedings to follow. Dalapon is not yet available commercially.

Wild garlic and horse nettle are still the problem weeds in established pastures. Repeated treatments of 2,4-D at one to 1½ pounds per acre before April 1 will bring the garlic under control. Horse nettle is harder to kill but a mixture of 2,4-D and 2,4,5-T at 1½ to two pounds per acre at blossoming time will kill nearly all of it. If this is used the pasture clovers most likely will need to be reseeded.

CAREFUL CREDIT CUTS EXPENSES

The Production Credit Association offers farmers valuable assistance when credit is needed. . . .

Condensed from Breeder's Gazette

Howard Gerlaugh

VICE PRESIDENT, FARM CREDIT ADMINISTRATION, 4TH DISTRICT

EFFICIENCY and good management will be the key to the livestock farmer's operating profits in 1954.

That's rather self - evident when you consider the narrowing margin between operating costs and income. While the prices you receive for meat and milk and wool have declined, the prices you pay have remained high. In the year ahead cash outlay is bound to remain high.

The good manager will use every means at his command to hold his operating cost **per unit of production** to a minimum.

An important factor of good management in 1954 will be the wise and careful use of credit. It will be especially important this year to leave a margin in your loan to take care of the unforeseen things that "just can't happen" but sometimes do happen.

There have been many improvements in credit service since the Production Credit Association began to help farmers solve their own credit problems. Because these organizations are cooperatively owned, and are controlled by the farmers who use them, they look at a problem from the farmer's point of view and provide the kind of service and terms that are sound for him. The livestock producer planning his program of breeding, gestation, maternity, nursing, fattening and marketing needs credit that he can depend on to carry him through the many creative months until his product is marketed and his income is thereby realized.

Piecemeal financing is dangerous for the livestockman. He cannot afford to run the risk of having to abandon a production program before his stock is

Reprinted by permission from Breeders Gazette, Spencer, Ind.

ready for market because of lack of credit to complete the program. If you are just starting in livestock, it is safer to get in a step at a time than to jump in blindly "all the way."

In 20 years of successful operation, the Production Credit Associations have found they can provide the dependable credit livestock farmers need only when they finance the entire farm operating credit requirements for the full season. In that way, the farmer knows he'll have the money he needs to buy those feeders next fall, to provide the supplement needed, to add the breeding stock that will increase his labor efficiency, to improve his pastures, or harvest a feed crop, or to handle whatever other need arises. Unless he knows that credit will be available for such things when they come up, he will be forced to operate at lower efficiency.

In 1954 you should give special thought to what operations you need to borrow for and how each dollar will be repaid. The budget type loan developed by the PCA's gives farmers the satisfaction of having their entire season's operating credit arranged in advance without having to pay interest on money before it is needed. A few examples will help show you livestock farmers how this works:

● Here's a young farmer who had completed his veteran's on-the-farm training and was renting a farm on a 50-50 livestock share basis. When he came to the Production Credit Association for a loan last March, he had 3 dairy cows of his own, and with his landlord owned 8 beef cows, 3 beef heifers, 6 beef calves, 14 sows, 13 gilts, 1 boar, 23 shoats around 125 lbs. and 80 suckling pigs. He needed $1,318.50 immediately to pay open accounts and for seed, fertilizer and fuel. Open accounts were high because he had purchased $1,500 of equipment during the previous year. He figured he would need an additional $500 for operating expense during the next two months, $1,200 during the summer, and another $700 in the fall. That made a total of $3,718.50 credit needed here.

He expected to repay $450 from his share of the income from the shoats by mid-June, $1,600 from the pigs by mid-September, $630 from six May-June litters by November 1, and the balance at the end of the year from twenty-one August-September litters. His $80 monthly dairy income would go for living expenses.

The loan was set up on a 12-months basis, but both the farmer and PCA fieldman agreed to take another look at it in the fall. When they did this on Oc-

tober 26, the association provided additional funds to buy another dairy cow and to give him $500 more operating capital. He now had 4 dairy cows, and his half-interest in 9 beef cows, 4 beef heifers, 6 beef yearlings, 9 beef calves, 12 fat hogs around 180 lbs., 42 pigs around 100 lbs., 117 pigs around 60 lbs. and 26 sows to farrow in the month of February.

Re-payments were made from his share of the income as each bunch of hogs was sold from late April through December, thus stopping the interest on that amount of principal. In these nine months the loan had been reduced by 119 hogs to $1,325.12 and there was easily enough more hog income in sight to pay off this balance by the end of the 12-month term for which it was written.

By using a budget loan, this farmer paid only $80.27 in interest figured at 6% for the actual number of days each dollar was outstanding. During this time he had the use of $4,321.50. If he had had to pay interest at the same rate on the full amount for nine months, his interest would have amounted to almost $195.00. So, his PCA budgeted loan helped him save money as well as assuring him the funds he needed would be there when he needed them.

● On the other hand, here's a bigger operator who's been farming for 30 years. He has a son who is now established and operating a farm in the same community. Until two years ago, when the son's position was strong enough for him to get a PCA loan on his own, the father helped by endorsing his loan. Now, each has his own basis of credit and carries his own loan with the Association.

The father's livestock operations include dairy and beef cattle, sheep and hogs. In the fall of 1952 he set up a loan to buy 55 feeder cattle. They cost more than expected and he used up his cash leaving less than usual for operating. Through the year he used his loan to pay for fertilizer, supplement, 57 feeder pigs, insurance, taxes, other operating expenses and $3,000 for remodeling his house. Altogether he used $12,753.75 through the year and paid $138.09 in interest figured at 6% for the actual number of days he had each dollar outstanding.

Although his feeder cattle failed to make any money, his hogs, sheep and dairy cattle did, and he was able to pay off his loan last September with enough left to buy 60 feeder pigs. In October he set up a new loan for $4,020, including $3,000 for feeder cattle and the balance for operating expenses. One repayment has already

been made from the sale of his half of 10 lambs, and other payments will be made in April from hogs, in August from wheat, and by maturity in October the cattle, lamb crop, and soybeans will cover the balance. This loan is made on an unsecured basis.

These two examples illustrate the flexibility of PCA loans in taking care of the sound credit requirements of any farmer with an eligible purpose for a loan. They also show how a budget loan saves money by being tailored to fit particular operations with payments geared to the time income is received. Seldom can the livestock producer make use of 90-day credit; he needs positive credit arrangements that will see him through the entire year.

The convenient bill-of-sale draft is another feature of PCA financing that livestock producers like. When their loans are set up they get a sufficient number of these drafts to go out and buy feeders of their choice wherever they feel they will get the most for their money. PCA bill-of-sale drafts are well known and readily accepted at any livestock market in the U. S.

Production Credit Associations contribute to the sound financing of livestock because they have no interest in any profit or income from the sale of feeders to the farmer or from the sale of the finished animals when they go to market. Their only interest is in providing credit on a basis that will be profitable and sound for the user of that credit.

PCA's will contribute to profitable livestock operations in 1954 by helping the farmer hold down his interest costs through a budget loan, by providing a line of credit that he can depend on throughout the year, by adjusting the term of the loan to the time needed for income to be realized from the livestock, and by providing flexibility for the farmer to meet changing situations. Every Production Credit Association is dedicated to that kind of service because it is run by the farmers who use its services

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Protein in Broiler Rations — Broilers between 6 and 10 weeks of age gained weight most efficiently on rations containing 18 or 19 per cent protein, while birds younger than 6 weeks required between 20 and 22 per cent protein for most rapid growth and development. The birds used in these experiments were a fast-growing, rapid-feathering strain of New Hampshire.

Anhydrous Ammonia

The use of anhydrous ammonia moves ahead. . .

Condensed from National Fertilizer Review.

J. N. Lowe, U.S.D.A.

IN RECENT years new fertilizer materials and new methods of fertilizer application have attracted widespread attention. Among the significant developments is the production and use of anhydrous ammonia, a highly concentrated form of nitrogen fertilizer. Bearing an 82 percent nitrogen plant-food content, this product shows promise of becoming increasingly important in the future.

Anhydrous ammonia is now being used in volume in the West, and in the deep South and Midwest. In the Western States it is generally applied by introduction into the irrigation waters. In this area the ammonia producers own or control most of the storage and application equipment. In the non-irrigated section of the country anhydrous ammonia is applied to arable soil as a liquefied gas under pressure. East of the Rockies, most bulk storage and transportation facilities are owned by the distributors; most application equipment by the farmers.

Statistics demonstrate the marked advance made in anhydrous ammonia use. In 1951-52, some 171,000 tons, N basis, were reported as being supplied for this purpose, which is a 45 percent increase over the 118,000 tons used the previous year. It is estimated that 1952-53 usage may approximate 250,000 tons, or about 15 percent of all the nitrogen available for fertilizer purposes.

Today anhydrous ammonia is used in more than three-fourths of the States and as additional ammonia becomes available the area of consumption, as well as the volume, should continue to expand. If the rate of increase continues at its present pace, it is reasonable to assume that by 1956 one-fourth to one-third of

Reprinted by permission from National Fertilizer Review, Washington, D. C.

the total N consumed as fertilizer will be in the form of anhydrous ammonia.

* * *

Dairymen who feed the best quality roughage can have $40 to $65 greater returns per cow over feed costs than farmers who feed poor roughages. That was shown by a recent feed utilization study conducted by Michigan State College.

* * *

The phenomenal increase in the use of anhydrous ammonia for direct application has taken place despite the general inadequacy of distributors' storage. High pressure storage tanks are generally used, and during the past three years the supply of steel plate suitable for fabrication of such vessels has been in short supply. Consequently, it has not been possible for distributors to install the desired storage capacity.

At the beginning of 1951 the bulk dealer storage capacity in the United States, excluding the Pacific Coastal States, was approximately 18 million gallons. It is estimated that during 1951 and 1952 an additional 18 million gallons of capacity was installed. The bulk of this capacity will be located in the South Central and North Central regions.

Illinois made the biggest gain in installed capacity during the last year, and may have surpassed first-ranking Mississippi by the end of 1953. Other top-ranking States in installed storage capacity are Louisiana, Arkansas, Missouri, and Texas. Many of the other States have a substantial storage capacity which will likely be expanded as suitable tanks are available.

Of all the fertilizer nitrogen used in the United States, approximately 42 per cent is applied as solid separate materials and 12 per cent as anhydrous ammonia. The following table shows the distribution of the two types, on a percentage basis, in the five regions. It will be noted that more than one-half of the anhydrous ammonia and one-third of the solid nitrogen separate materials are consumed in the South Central States.

Percentage Distribution of Nitrogen Consumed as Separate Materials in 1952 by Regions

Kind of Material	North Atlantic	North Central	South Atlantic	South Central	Western	Total Percent
Solid Materials	2	18	25	34	21	100
Anhyrous Ammonia	1	11	2	51	35	100

Vegetable Insects Have Declared No Truce

Here's some ammunition for your "Battle of the Bugs"...

Condensed from Pennsylvania Farmer.

J. O. Pepper

DURING the summer, insects are a constant problem for the vegetable grower. The most economical control of insects attacking vegetables is obtained when the proper insecticide is used before the insects cause serious damage. Home gardeners and commercial growers should always be on the alert for insect attacks.

In the following paragraphs, the control of several of the more common vegetable insects will be given for the home garden and the commercial vegetable grower.

Aphids or Plant Lice

For general control of aphids on various vegetable crops, a four per cent nicotine dust is effective. Such a dust may be made by mixing eight ounces of 40 per cent nicotine sulphate with five pounds of hydrated lime. A larger quantity may be made by mixing two quarts of the 40 per cent nicotine sulphate with 50 pounds of hydrated lime. Such nicotine dusts should be used at once or stored in an airtight container. Ready prepared nicotine dust may be purchased commercially.

As a spray, mix one tablespoon of 4 per cent nicotine sulphate plus a small handful of soap flakes in one gallon of water. Larger amounts are made by mixing one quart of nicotine sulphate plus three pounds of soap flakes in 100 gallons of water.

Special Aphids

Cabbage Aphid: Use one of the following materials as a spray in 100 gallons of water.

1. TEPP at manufacturers' directions. Should not be used closer than five days of harvest.

2. Parathion 15 per cent wettable powder, one pound.

Reprinted by permission from Pennsylvania Farmer, Pittsburgh, Pennsylvania

Should not be used closer than 21 days of harvest.

3. Malathon 50 per cent emulsion, one quart. Should not be used closer than ten days of harvest.

Tomato Aphid: Use one of the following materials as a spray in 100 gallons of water.

1. Malathon 50 per cent emulsion, one quart. Should not be used with bordeaux mixture or closer than ten days of harvest.

2. Parathion 15 per cent wettable powder, one pound. Should not be used closer than 21 days of harvest.

Lima Bean Black Aphid: Growers may use parathion, TEPP, or malathon as discussed under cabbage and tomato aphids. These insecticides also give control of bean beetle and leafhopper.

Potato Aphids: If aphids build up under a regular DDT potato insect spray program, then use one pound of parathion 15 per cent wettable powder in 100 gallons of spray. One application usually gives aphid control for three to four weeks. Two to three parathion applications properly timed during the season will control the potato aphids. DDT should be used in all other applications.

Precautions: The organic phosphorous materials like parathion and TEPP are extremely poisonous and hazardous to handle. Be sure to read and follow all precautions on the container.

Potato Insects

The use of DDT, in the regular sprays applied at weekly intervals, will usually give control of most potato foliage insects. Use 50 per cent DDT wettable powder at the rate of three tablespoons in one gallon, or two pounds in 100 gallons of water. As a dust, use three to five per cent DDT.

Cabbage Worms

At least three different kinds of worms are injurious to cabbage and they may all occur at the same time on the plants. Control should be started as soon as the small worms are found on the plants.

Home gardeners should use either a one per cent rotenone, or a commercial combination of pyrethrum and rotenone, or a three per cent DDT dust.

Commercial growers may use a three to five per cent DDT dust, or a DDT spray containing either one quart of 25 per cent emulsion or two pounds of the 50 per cent wettable powder in 100 gallons of water. The combination of DDT, plus one of the materials suggested for aphids on cabbage insects, will control all cabbage insects. DDT should not be applied closer than 30 days to harvest.

Avoid the use of parathion or DDT on broccoli, Brussels sprouts, cauliflower, etc., after

these plants begin to form heads; use rotenone, TEPP, or malathon.

Cucumber and Melon Insects

The striped and spotted cucumber beetles are by far the most serious pests of these crops. Insecticide applications should be started as soon as the plants start cracking the soil to emerge and repeated at five to seven-day intervals until control is obtained.

As a dust—Use either five per cent methoxychlor or one per cent rotenone or a combination of pyrethrum and rotenone dust, marketed as CPR dust.

As a spray—Use either three pounds of 50 per cent methoxychlor or liquid rotenone at manufacturers' directions.

The melon aphid often attacks cucumbers and melons.

Home gardeners should use nicotine as discussed under general aphids.

Commercial growers may wish to use one of the materials as discussed under cabbage and tomato aphids.

Mexican Bean Beetle

This insect is a serious pest of all garden beans. Home gardeners should use either a rotenone or five per cent methoxychlor dust. Be sure to cover both sides of the leaves. As a spray, use liquid rotenone at directions of the manufacturer, or three tablespoons of 50 per cent methoxychlor in one gallon of water. On larger scale, this would be two pounds of methoxychlor in 100 gallons of water. The destruction of all bean vines soon after the last picking will help reduce future bean beetle injury on later plantings.

Bean Leafhoppers

These are the same leafhoppers that feed on potatoes and hay crops and sometimes migrate to beans and cause much injury. Where this insect may be a problem, the home grower should use methoxychlor as discussed under bean beetle.

Commercial growers may wish to use one pound of 15 per cent wettable parathion in 100 gallons of water. The parathion will control all insects attacking beans. **Be sure to read and follow precautions on the container. Parathion should not be applied when plants are in bloom.**

Carrot Leafhopper

This insect transmits the carrot yellows and should be controlled. Control should be started when carrot plants are about two inches high and repeated at seven to ten-day intervals for three applications. As a dust, use five per cent DDT wettable powder at rate of three tablespoons in one gallon, or three pounds in 100 gallons of water. In some instances, it is advisable to treat a small area around the field, especially if the area is weedy.

Tarnished Plant Bug on Celery

This insect feeds by sucking

plant juice. Its injury is often called "black joint" and, in many cases, its feeding injury causes the heart of the plant to rot. The same concentration of DDT should be used as discussed under carrot leafhopper. The DDT should be included in all applications to within 30 days of harvest.

Onion Thrips

These are the insects that cause the onion tops to turn brown and die.

As a dust—Use five per cent chlordane.

As a spray—Use 50 per cent chlordane wettable powder at the rate of three tablespoons in one gallon, or three pounds in 100 gallons of water.

Corn Borer and Corn Earworm

The best commercial control of these insects has been obtained with DDT sprays. Most commercial sweet corn growers apply one spray for the corn borer followed by two or three sprays for the earworm.

Materials to Use per Acre—Corn Borer: DDT, 25 per cent emulsion — three quarts in 25 gallons of water. Make application when the corn is in the green tassel stage.

Corn Earworm: DDT, 25 per cent emulsion, three quarts; white mineral oil (65-95 sec. Saybolt), one and one-half gallons; and water, 25 gallons.

Make the first earworm application five days after first silks appear and repeat with another application four days later. If weather is cool and the silking period is prolonged, a third application five days after the second application would be desirable.

Home gardeners may reduce the above mixtures to small quantities and use as a spray, or a five per cent DDT dust, thoroughly applied, will give some control.

Cornstalks treated with DDT should not be fed to animals.

The Protein Content of Corn can be increased through extra nitrogen applied during the growing period. The total crude protein in corn has been raised as much as 1 per cent (from 8½ to 9%) by added nitrogen, producing around 133 extra pounds of this important feed nutrient per acre, according to research results at the Missouri Station. This is a double dividend for good management, because extra nitrogen will not only increase yields of corn but will make better, more nutritious feeding corn. Furthermore, a fertility boost is given to the grain crop following corn the next year.

A Lot of Folks Plant a Lot of Pines

Here is an example of efficient organization to accomplish a specific conservation aim. . .

Condensed from Soil Conservation.

A. T. Chalk, SOIL CONSERVATION SERVICE

THERE was a time when Marion and Cass Counties in eastern Texas had a thriving prosperity that was largely based on their forests of valuable pine trees. But, because of the practice of clean cutting then prevalent, the woodlands were wiped out and so was the prosperity.

Attempts were made to grow crops on some of the denuded land but the sandy soil leached and washed away and the fertility of the land, naturally low, became lower. Crop yields dropped to unprofitable levels, and the effort to farm the land was abandoned. Today much of the land in the two counties is idle, producing neither farm income nor taxes.

There has been an awakening, however, in the two counties that now comprise the Marion-Cass Soil Conservation District. It is realized that the prosperity of the two counties must depend in the long run on woodlands of marketable pine trees and that the sooner the land is restored the sooner will the prosperous days of old return. Reforestation has been a goal toward which the supervisors of the Marion-Cass Soil Conservation District and others have been working, and they now have widespread and unified support of a definite plan to put the idle land to its best use: the production of pine trees.

The December 1953 and January and February 1954 planting season was the greatest in the history of the two counties. By the start of the planting season, 3 million pine seedlings had been ordered. Last year, a record at that time, half a million pine seedlings were planted in the two-county soil conservation district.

The present large accomplishment is merely a good start. Six million seedlings will take care of about 6,000 acres. But in the Marion-Cass Soil Conservation District there are 234,110 acres that ought to be reforested with

Reprinted from Soil Conservation, Washington, D. C.

profitable pine trees. Most of that land, comprising 30 per cent of the total area of the two counties, is producing little if anything today.

"We're off to a good start," says Russell N. Cash, farmer-banker of Atlanta, one of the communities that stands to benefit substantially. "We realize that 6,000 acres make only a slight dent in the acreage that has to be replanted to pines, but we are well organized now and everyone in a position to help understands and appreciates the problem and wants to do something about it. We've built up a momentum that will carry the project faster toward its goal with each passing year."

The tree-planting campaign was sparked by the district's board of supervisors: The supervisors started off early in the spring of 1953 to organize their campaign by meeting with representatives of various agencies, organizations, institutions, business and industry. Before long every community was well organized to promote interest in the campaign.

More than 70 units have taken active part in the project. These include paper and lumber firms, chambers of commerce, county courts, Texas Forestry Association, public utilities, veterans' classes, individual merchants and professional people, Texas Forest Service, Extension Service, vocational agriculture teachers, the former Production and Marketing Administration, Farm Home Administration, Production Credit Administration, school superintendents, principals and teachers, banks, railroads, manufacturers, Lions' clubs, Rotary clubs, garden clubs, Rural Neighborhood Improvement Councils, Rural Electrification Administration, Boy Scouts, Camp Fire Girls, auction barns, radio stations, newspapers, magazines, clergymen, city governments, pulpwood producers, Farm Bureau, Parent-Teacher Associations, the Southern Pulpwood Conservation Association, and the Soil Conservation Service.

Each unit was given specific responsibilities and one person designated for each kind of activity. For example, the 11 garden clubs in the district accepted the task of conducting a poster contest in the schools.

Herman K. Byron, education officer of the Texas Forest Service in District 1, was appointed to maintain unity among the participants and to supervise the publicity campaign.

Some of the participants donated money for prizes in the poster competition, to buy "incentive" seedlings (1,000 free trees for each 2,000 bought) and for other purposes. Some donated or lent tree-planting machines and other equipment. The county courts agreed to

transport the seedlings without cost. Ministers gave sermons on the importance of protecting the land and keeping it productive. Car-bumper signs—"Plant More Trees"—were distributed. Talks were given before school assemblies and other groups. Newspapers, radio stations and magazines helped to publicize the reforestation project.

"It has probably been the most concerted campaign that any soil conservation district has carried on to attain a specific conservation goal within a district," Board Chairman Allen says.

Some firms owning land in the district were so favorably impressed that they made plans to reforest their own holdings. A large paper company bought a tract of land and arranged immediately to plant 150,000 seedlings this season. "We felt that there would be adequate fire control," a company official explained.

Various groups were assigned a certain number of trees for planting. These included Future Farmers of America, 4-H clubs, Lions' clubs, Rotary clubs, Negro 4-H clubs, Veterans' Vocational Agriculture classes, absentee owners, and the general public.

The Texas Forest Service nursery at Alto supplied the pine seedlings at $3.25 per thousand.

Sheep Management Tips

It pays to dock ewe lambs, and to dock and castrate ram lambs. That's the general opinion among Virginia sheep producers, says G. A. Allen, Jr., animal husbandman at VPI.

Even though most livestock markets sell long-tailed ewe and buck lambs with docked and castrated lambs, a recent survey showed most sheep producers dock and castrate their lambs. Docking helps lambs keep cleaner, they are bothered less with flies, and look better to the grader or buyer. The reason for castrating is that buck lambs make satisfactory gains up to 50 or 60 pounds and seem to make slower gains than wether lambs from then to market weight. Buck lambs also get coarse in the neck and shoulders and produce a lower percentage of the high-priced cuts of meat than wether lambs.

The earlier lambs can be docked and castrated, the better. It should be done before they are two weeks old. There are several good ways to do the job. The elastrator or rubber band method can be used where trouble is not expected from tetanua. The knife and good sanitation is still the surest method.

Virginia Polytechnic Institute

Fork Lift Truck Cuts Orchard Costs

Use of industrial equipment means savings in labor and costs for the fruit grower. . .

Condensed from American Fruit Grower.

John A. Chisholm

THE fork-lift truck is taking the backache out of fruit harvesting in some larger orchards. Besides eliminating much hand lifting of crates, the fork-lift truck means more money for the orchardist, the packing house operator, and the processor.

In one instance, a 25,000-bushel apple crop was moved by using a standard lift truck of 2,000-bushel capacity. Part of the harvest went to buyers who unloaded and moved apples by hand and part went to receivers with fork-lift trucks. Lifts were used for unloading filled field crates from orchard trailers, moving and stacking filled field crates, loading and unloading trucks, and handling empty crates.

By using a lift truck to handle the apple crop a grower with a lift and three men did the job which normally required seven men using hand methods.

A similar study was made in moving a 300-ton cherry crop. One man and a lift did an unloading job in one-fourth the time of three men working by hand. While three men unloaded 100 lugs of cherries by hand

* * *

The number of farm workers in the U.S. has decreased by two-million—one-sixth in the past twelve years. Farm output has gone up one-third, and labor output per man-hour has risen nearly one-half.

* * *

in an average of 9.9 minutes, one man and a lift did the job in 1.9 minutes.

Labor costs of loading trucks with cherries by hand averaged 56.5 cents for 100 lugs. By using a lift truck the labor cost was 4.7 cents, a saving of 51.8 cents for 100 lugs.—**John A. Chisholm**

Reprinted by permission from American Fruit Grower, Cleveland, Ohio

ARE YOU SURE YOUR FARM LEASE IS NOT OUT OF DATE?

Rapid changes in farming methods and economics are throwing some farm leases out of balance. It may be wise for you to revalue your farm lease. . . .

Condensed from the Kansas Farmer

Wilfred H. Pine

KANSAS STATE COLLEGE

LANDLORDS and tenants generally are satisfied if they have fair and equitable leases. Also, a good lease will encourage the most profitable use of resources. Equitable means sharing returns in the same proportion as costs are shared.

The amount of income from the farm depends on how well such resources as land, machinery, and labor, are brought together. In leasing, landlords and tenants combine their resources. The larger the total income the larger will be the amount available for each party. The lease arrangement should encourage profitable farming.

Principal decisions in making the most profit on rented farms are: (1) What to produce and how much to produce, (2) what is to be furnished by the landlord and what is to be furnished by the tenant, and (3) what lease arrangement will encourage two parties to work together long enough for the most profitable use of their resources. All farmers are concerned about what to produce. For rented farms the decision might be made by either landlord or tenant or both.

How long the parties will work together depends largely on equitable sharing of costs and returns. Several years may be required to develop rotations, make full use of some kinds of fertilizers, or to develop a dairy herd or a beef cattle enterprise. One or both parties probably will not be interested in incurring costs if the lease might terminate before all benefits are received. Almost two thirds of the leases in Kansas are for one year, yet the aver-

Reprinted by permission from Kansas Farmer, Topeka, Kansas

age length of occupancy is 8 years. Most leases then could just as well have been written for longer terms altho most landlords and tenants might want a 1-year lease until they get acquainted. What each party is to furnish and what share of the returns each is to receive may be based on either established custom, or on an estimate of the value of what each is to furnish and sharing the returns accordingly. Use of custom assumes that over a period of years farmers arrive at equitable arrangements. For the second method information on costs or expected expenditures is needed. Such information may not always be easy to obtain and some work is involved. However, it is the sound way to determine equitable arrangements for a particular farm.

Methods of farming and prices change rapidly. Farmers are using tractors instead of workstock, new fertilizers, chemical weed killers, the pickup baler, artificial insemination, dehydrated alfalfa, and other new developments which have affected costs. No custom has been established for some of the changes, and in other cases customs are far behind and are no longer equitable. Studies show that cash and share rents have been increasing as a result of the relatively profitable conditions in the 1940's. However, rents did not start to increase until awhile after income had increased. When incomes start declining rent payments will not change for awhile. This is one of the troubles in using customary arrangements and is a reason for using custom with caution.

Ninety per cent of farm leases in Kansas involve sharing crops or livestock. One third is the most common share paid to landlords for grain crops and soybeans. For corn the shares are larger in a greater portion of cases than for wheat, oats and soybeans. Also, shares are larger in Northeastern Kansas than in Southeastern or Western Kansas. What the shares should be depend on quality and quantity of land and other resources furnished by the landlord. The landlord generally receives a larger share for the more productive land than for the less productive land.

It has become a common practice for landlords to share in the cost of fertilizer and lime. In more than one half of the leases the share of the fertilizer paid by the landlord is the same as the share of the crop received.

There are many leases in which the share of fertilizer is larger than the share of crops. It is common particularly in Eastern Kansas for the landlord to furnish all of the lime. Ex-

cept for Northeastern Kansas, tenants furnish seed corn and small-grain seed in nearly all cases. In about one fourth of the leases landlords pay for combining small grains in Northeastern Kansas. Otherwise tenants provide for combining and corn picking. These are recognized as ordinary expenses of tenants. About one half of the landlords share hail insurance in proportion to shares of wheat. There is less certainty concerning the responsibility of the tenant for destroying weeds. Two fifths of the landlords share in weed spraying.

In livestock share leases, the ownership of poultry and sheep generally is not shared, but sharing equally is common for ownership and sales of beef cattle and hogs. It is not uncommon in livestock leases for tenants to own fully a few milk cows and some chickens, and receive the full income from them largely for family use. However, there appears to be more cases of sharing ownership of dairy cattle than a similar sharing of dairy product sales. Landlords pay one half of the feed, breeding and veterinary expenses in three fourths of the livestock cases.

Sharing a new item of cost in the same proportion as the products are shared is a fair procedure. If the landlord receives one-third share of wheat he should pay one third of the cost of fertilizer, including application. This may mean the landlord should pay about one half of the purchase price of the fertilizer. The tenant has to do the work and furnish the equipment for applying the fertilizer. Where the item is not strictly an additional cost it is not so easy to determine sharing of costs. Chemical weed killers may be of this type. They save the tenant expenses for cultivation. The cost may be greater with chemicals and more effective by increasing yields and consequently the landlord may need to share part of this cost.

Conservation practices and improvements might be handled like new cost items. If these costs are required, however, to maintain productivity of the farm the landlord may be responsible for them. Another method which is being used and appears fair is for the tenant to pay the initial cost and be compensated by the landlord if the tenant moves before he can get the full benefit from the practice or improvement. For phosphate fertilizer there is some residual value for 3 to 4 years. A new shed may last for a much longer period. The tenant's family might want a bathroom in the house. Landlords have given permission to tenants to make such improvements and have compensated tenants on the basis of the pro-

portion of 10 years remaining when the lease is terminated.

Costs of establishing grass and legumes for hay crops can be divided with landlord providing seed, fertilizer and lime and tenant furnishing labor and equipment. For more permanent improvements such as terraces, ponds and buildings, the landlord pays the initial costs and tenant maintains the improvement from year to year. This is a general procedure. However, each farm should be examined and arrangements adjusted to it.

The relative contributions of landlords and tenants have changed because prices of inputs have not changed alike. The USDA reports farm wage rates in 1953 were 5 times the rates in 1910 to 1914. Other cost items are not quite 3 times the 1910 to 1941 average. As a consequence a relatively higher allowance must be given to tenants for their labor. In the old livestock share lease the tenant furnished all the labor including hired help. In recent years some landlords have found it necessary to pay one half of the hired labor.

A lease is a contract between a landlord and a tenant. Laws are about the same for written and oral agreements. Principal advantages of written leases are: (1) The parties are more likely to examine carefully their arrangement, and (2) in case of disagreement there will be a better means of deciding what to do.

A lease agreement should specify all important relationships between landlord and tenant. However, there may be details in operating the farm which cannot be forseen or included in the agreement. These will have to be settled during the year. The minimum requirements for a lease agreement are: (1) Identification or legal description of the farm, (2) length of agreement and provision for renewal, (3) kind and amount of rent to be paid, and (4) identification of landlord and tenant.

You Can Reduce Mastitis By Complete Milking of Infected Cows — Incomplete milking of infected cows leaves infected milk in the udder, prolonging the infection and increasing the severity of the disease. Cows which produce abnormal milk that is detected by use of the strip cup should be placed at the end of the milking string or milked last. Infected cows are a source of contagion so long as they remain in the regular milking string. First-calf heifers should be milked first in the milking string in order to keep them as free of any udder infection as possible.

University of New Hampshire

Hybrid Seed Corn Without Detasseling

New methods eliminate the necessity of detasseling when producing hybrid seed. . .

Condensed from Michigan Farmer.

E. C. Rossman

A MAJOR problem in the producing of hybrid seed corn has been that of removing the tassels from the female or seed producing rows in the seed fields. The detasseling operations required for 10 million bushels of hybrid seed are not only costly but hazardous when labor shortages or rainy weather prevail during the detasseling season.

Detasseling costs the seed producers about 10 million dollars annually.

Tassels with Sterile Pollen

To get away from this problem, corn breeders have been developing a new technique discovered in 1931, making it possible to produce hybrid seed without tassel pulling. The system works and is now being used in some commercial seed fields. Corn breeders are trying to simplify the technique so it will be easier for producers to use.

The method starts with the corn breeder who breeds the male sterile characteristic into one of the 4 parent inbred lines for a hybrid. This male sterile characteristic makes the tassel develop sterile or dead pollen. When this male sterile inbred is crossed with one of the 3 remaining inbreds, the resulting single cross hybrid carries this pollen sterile character. The other 2 inbreds are then crossed to make a second single cross hybrid. These 2 single crosses are then ready for the seed producer. The one which has sterile tassels will become the seed parent (female parent) and the second single cross will be the male or pollen producing plant which is planted every seventh and eighth row in the seed production field. Because the seed producing parent (female parent) does not produce live pollen in the tassels, the tassels will not have to be pulled out

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as was formerly the case. Since the hybrid seed produced will carry this male sterility into the farmer's cornfield, one further step needs to be followed.

The seed producing rows cannot all be made up of male sterile rows at present. The present plan calls for 6 rows of seed producing corn (female parent) with the center 2 rows planted with the same identical single cross without sterile tassels. Thus, 2 of the 6 rows will need to be detasseled. Then, when the seed corn is harvested, one-third of the plants from this seed will produce tassels with live pollen and two-thirds will produce plants with sterile tassels. This method insures sufficient tassels producing live pollen in the farmer's cornfield.

This growing of 4 rows of male sterile plants and two rows of male fertile plants as seed producing parents (female parents) in the seed fields has been one of the main handicaps to the new method. However, producing the seed in this manner, with proper harvesting followed by further blending and mixing at drying and shelling time, insures a proper blend for the farmer.

Corn breeders are developing a method of getting around the complication of 2 types of seed producing (female) rows in the seed fields. It is now practical to introduce a pollen restorer characteristic into the male parent of the hybrid by a plant breeding program. When this is done, all of the plants in the farmer's cornfield will produce pollen and there will be no danger of poorly filled ears in his field.

A hybrid produced with a male sterile seed parent (female parent) and a pollen restoring male parent needs to be thoroughly tested to be sure that it will perform for the farmer like the same hybrid produced with normal male fertile inbreds. So far, extensive tests show that the performance of hybrids produced by the male sterile method is equal to the performance of the same hybrid produced in the old method of detasseling.

The new method of seed production is still very new and many problems still confront both the corn breeder and the seed producer. The advantages and disadvantages of the method largely apply to the seed producer.

Advantages and Disadvantages

Some of the advantages are: (1) fewer labor problems in recruiting and maintaining large crews during the detasseling season; (2) lower cost of seed production; (3) seed yields may be slightly higher since detasseling causes some injury to the plant and may reduce seed yields; (4) the crossing job may be done better if the male sterile single

crossers are completely sterile under all conditions.

Some of the disadvantages are: (1) the new procedure still requires blending of male sterile seed with male fertile seed; (2) more rigid inspection and more technical skill is required by seed producers; (3) foundation seed programs are made more complex; (4) corn breeding programs are made more complicated and there may be delays in development of the new corn hybrids; and (5) the performance of the hybrid may be modified when male sterility is added.

The financial saving to the farmer who buys hybrid seed corn will be slight because of added expenses of adding the male sterility characteristic and the more complicated and costly foundation seed production. The main benefit that will be realized by farmers will be more assurance of dependable high quality hybrid seed by removing the hazards of weather and labor at detasseling time.

Some hybrid seed corn companies are now producing part of their seed with this new procedure.

Don't Underestimate Value of Manure

Value of farm manure is often greater than farm owners realize. One reason for this is the difficulty of figuring the real worth of manure on a dollar and cents basis.

However, economists have been able to shed considerable light on the subject in recent years. In one survey they found, for instance, that 127 general livestock farms were producing on the average of about $1,500 worth of manure per farm annually.

They estimated that each of these farms supplied per year about 500 tons of manure worth $3.00 per ton, based on prevailing plant food costs. This figure did not include the value of organic matter which varied from farm to farm. But only 185 tons of it were dropped at the farmstead, of which 172 were recovered. The rest went on other areas of the farm.

Very little of the manure which fell on outside dirt lots was ever recovered.

As studies progressed, striking differences showed up between classes of livestock. The value of a ton of dairy and hog manure was only $2.58 against $3.50 for fattening cattle. Poultry manure without litter, and sheep manure had the highest values at $5.25 and $5.78 respectively. Of course, the total manure production per farm was much lower on sheep and poultry than other stock. *Purdue University*

Veterinarian's Notebook .....No. 5

Be Careful With Young, Fresh Grass

Don't fail to read this pithy report on bloat by an English veterinarian. . .

Condensed from Farmer & Stock-Breeder.

"You know sometimes Ted you do some of the stupidest things for an intelligent man." The cause of the argument was five "blown" (bloated) cows within a space of two hours. It was a lovely day. Ted thought it would do the cows good to go out in the sun so he put them out on to a bit of "fresh grass" as he called it.

It was fresh all right, especially after that shower yesterday and a bit of warm sun on it. It was so fresh, it was bubbling—inside five of Ted's cows.

The first one we had to puncture with a trocar and let the wind out, otherwise it would have killed her. She was down when we got to her, and grunting like mad, with the left side swollen up tight.

The second one we "let down" with a probang—a still leather bound tube which we pushed down her throat. My goodness, how the wind rushed out. The smell of it was dreadful.

I told him to get the lot in then, and within an hour he had rung me to say he had three more blown up. I had to put the probang down one, but managed to stop the other two from getting too bad with an injection each and some medicine. By that time I thought I would give Ted a bit of my mind for the "good of his soul."

You've got to be careful with fresh grass, especially in warm muggy weather, and more especially on damp meadows. It ferments very sharply indeed and produces large volumes of gas which the cow just can't cope with.

When the time comes to turn the cows out, take it easy. Either

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give them a good feed of hay before you turn them out so they won't eat so much grass or only turn them out for a very short time to start with and increase the length of time daily.

Another thing, if you turn them out suddenly and let them have their fill, you'll not only get one or two blowing up, but you get quite a number "scouring," and when they are doing that, the milk yield is bound to to go down a bit.

You want to be most careful what you give to a "blown" cow. There are some drugs called "carminatives" — like ammonium carbonate and sodium bicarbonate. Their action is to cause the eructation or belching of wind from the stomach.

Don't go giving that sort of thing to a badly "blown" cow. You'll only give the animal increased pain and maybe even kill it. Also don't give salts—they'll do no good either.

All that will happen to them is that they will go skating right over the top of the fermenting mass in the rumen and pass straight into the bowels where they will give rise to the most appalling diarrhoea; she is going to have diarrhoea anyway so if you add to this with Epsom salts then you probably deserve all you'll get—a dead cow.

Cows' "insides" are tricky things. There are four "stomachs." A large rumen which occupies all the area from the ribs back on the left side. (This is a sort of fermenting chamber and is the one that swells up in the "blown" cow).

Next comes the reticulum (the lining of it is better known as "tripe.") This is about the size of a football and lies right in the middle of the cow, hard against the liver and diaphragm.

Then comes the omasum, a sort of churning and sifting chamber, and finally the proper stomach or abomasum.

At the beginning of the year when the hay is getting a bit short and they will eat the straw bedding, then they tend to suffer from a type of blockage of the rumen.

This big stomach stops contracting, loses its tone and lies like a flaccid sack of food inside the cow. The animal soon loses its appetitite and its milk drops off. The dung gets stiff and darkish in colour and a bit slimy and the cow may grunt a bit.

Again, don't go giving pounds of salts—they will only fly over the top and cause a bad diarrhoea.

You may find a bit of black treacle handy in these cases, or failing that, ask your vet for a bottle of medicine for her— a couple of doses of the right stuff and she'll be as bright as a button again.

Just a word of warning here. In any case of indigestion, don't

overlook the possibility of a "foreign body" in the reticulum or second stomach.

Cows will pick up the most astonishing things in their food, (nails, screws, washers, large pebbles, and pieces of wire) all of which seem to pass into the reticulum. These foreign bodies have a large range of effects.

Some cause a loss of appetite, grunting, dark and slimy faces. Some cause a loss of appetite, diarrhoea and grunting. Some, especially the pebble, cause a variable appetite and a distinct tendency to "blow up."

All cause a drop in milk yield; and sharp pieces of wire which dig quickly into the walls of the reticulum cause quite a startling sudden drop in yield and a pronounced grunt.

Now don't waste time on these sort of cases. Don't try it out for a week or ten days and then decide it was time "some-one had a look at it."

By observation and the use of such confirmatory diagnostic aids as metal detectors (in cases of wire and nails) your vet will be able to diagnose a foreign body and then, taking the age and value and condition of the cow into consideration, it is up to you to decide whether you would like the animal operated upon.

If left, these bits of wire penetrate the wall of the reticulum, pass through the diaphragm into the chest cavity, cause an infection round the heart, and the next thing is a trip to the knacker's yard.

Ted and I still get on, funnily enough, and even more remarkable still is the fact that he agrees with me.

Weed Seeds Live 70 Years

How long will seeds live? Scientists don't have the answer to that question because an experiment designed to give the facts hasn't been completed yet. It has 80 more years to run.

The seeds in the test are dug up from the ground every 10 years to determine their viability. G. P. Steinbauer of Michigan's botany and plant pathology department reports that the last time they were dug there was a small percentage of viable seeds from 20 species buried 70 years ago. In disturbed soil, however, seeds would have shorter periods of dormancy. But they may persist in a dormant but viable state through several crop rotations. Steinbauer suggests that more information is needed on the most effective ways to speed up germination of the more persistent and harmful weed pests so they can be eradicated easier.

Michigan State College

Dry Lumber in a Hurry

Here's a way to get extra duty from your crop-drier. Just hitch it up to a lumber kiln. . .

Condensed from Ohio Farmer.

Oral M. Johnson, U. S. Forest Service

FARM-GROWN lumber can be seasoned rapidly on the farm for practically any building purpose by putting the crop drier to work. So say specialists at the U. S. Forest Products Laboratory in Wisconsin.

A practical way of doing this at low cost has been developed and tested by the laboratory's researchers. The scheme was demonstrated for the first time last year on the farm of the Ohio Agricultural Experiment Station near Carpenter.

A rough wood structure covered with roofing paper and built of green lumber taken from the material to be dried is all that's needed in addition to the drier. Design of the structure varies according to the make of crop drier available. Essentially, though, it consists of two parts — a funnel-like square air tunnel through which hot air passes from the blower to the lumber pile, and on the other side of the pile a shed-like structure that shunts the air back through the pile. During operation, the lumber pile is also covered with roofing paper to prevent escape of hot air. The structure is, in effect, a temporary dry kiln.

The laboratory undertook the research, explains K. E. Kimball, research engineer, in order to overcome one of the major obstacles farmers encounter attempting to use timber grown on their own woodlands. Lumber piled outdoors takes months to dry to a condition suitable for barns and sheds. Outdoor drying, moreover, cannot bring the moisture content of lumber low enough to make it suitable for use as flooring and other interior woodwork of houses.

Farmers and millmen attending the Ohio demonstration were quick to recognize that the crop-drier unit is a practical way of preparing lumber for use soon after it is cut. Even a small conventional dry kiln calls for

Reprinted by permission from Ohio Farmer, Cleveland, Ohio

a sizable outlay of capital. This is not justified for occasional seasoning of small quantities of lumber —- say, enough for a house or barn. Moreover, commercial kilns may not be available in the vicinity.

On the other hand, some farmers have crop driers that are used only a few weeks in the year for drying corn, hay and other field crops. They may also have woodlots with merchantable timber or from which lumber could be obtained for their own use.

The make of crop drier available at Carpenter made it necessary for Kimball to design his air tunnel with a floor across the middle so that the air would pass through the upper part of the lumber pile. It then was reversed and passed back through the lower part of the pile to the crop drier, where it was reheated and recirculated.

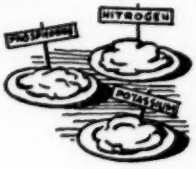
While the setup is simple, some knowledge of seasoning is necessary to avoid damage to the lumber and to get uniform drying. The pile must be properly built to permit flow of air past all boards. The lumber must be tested occasionally during a drying run by means of short boards. These are called kiln samples, are placed in different parts of the pile and can be removed for moisture content determinations.

Different species of wood require adjustments in seasoning techniques. For example, some species dry easily and without injury due to fast drying. Others must be dried more slowly; and some should first be air seasoned to get most of the free moisture out of them before they are put in the kiln.

The forest products laboratory has free literature available for farmers and small-mill operators on these aspects of seasoning. While there is nothing complicated about the techniques, they should be understood before lumber drying is attempted. Requests for information should state the kind of crop drier that is available, so that suggestions for design of the air tunnel can be made. (Write Forest Products Laboratory, Madison, Wisconsin).

Tenants Are Choosy and why not? It is getting difficult to rent a farm to a really good tenant unless the house is modern. And what's more, if the farm is large, requiring a second house, the tenant is experiencing more and more difficulty in keeping a married farm hand unless his house also has a bathroom. A good farm-raised wife, having lived in a modern farm house, merely refuses to go back to the backyard privy type of living.

Do-Well Agricultural Letter



Handling Liquid Manure

All the elements of fertility are saved on this California Farm. . .

Condensed from Electricity on the Farm.

F. Leland Elam

DAIRYMAN Frank Steiner of Vacaville, California, saves every bit of manure from his dairy cows and puts it back, in liquid form, on his irrigated pastures and alfalfa. His system is classed as outstanding by farm authorities.

The arrangement of the manure pit is such that Mr. Steiner is able to flush the milking barn, the feeding barn, and the corrals into it. Furthermore, he can distribute this liquid fertilizer to his pastures at all seasons of the year.

The 10' deep storage pit, capable of holding 20,000 gallons, measures 12' x 24' and is located at the lowest point in the corral. It is completely covered to keep the cows away from it. Drainage to the pit is via open concrete drain, set at the ground surface, which carries the manure along as it is washed from the milking barn and holding corral.

A 2½ hp electric manure pump is used to raise the liquid fertilizer from the pit to two different means of distribution.

During late spring, summer, and fall months, the liquid is pumped into a 1000 gallon tank trailer which is pulled behind a tractor. This tank has spreaders and valves at the rear for distributing the liquid as it is pulled along. It is hauled to the fields and the contents spread according to needs during the dry weather.

During the winter months, when the fields are too wet to drive on, a different system is used. The long pipe, used to fill the trailer tank, is swung around and hooked up to a permanent piping system that extends from

Reprinted by permission from Electricity on the Farm, New York City, N. Y.

the pit to the irrigation system, fifty feet distant. Thus the liquid fertilizer can be pumped onto the fields during a season when it would be impossible to spread it in the usual manner.

Although this last may appear simpler, Steiner much prefers distribution by the tank trailer. It gives him a chance to make distribution heavier at the point where it is needed most. He also much prefers the use of the liquid over dry manure because he can keep fertilization going all year. The liquid gives a much more even distribution than would the dry manure.

Weed Killers In Corn Save Time

One hundred years ago it took a farmer five hours to produce a bushel of corn. Following World War I, he cut this time to 21 minutes, and today the modern Corn Belt Farmer does the same job in four minutes.

Farmers now turn out a bushel in record time because of their scientific "know-how", aided by mechanism, hybrid corn, fertilizer, and the latest discovery to benefit production—chemical weeding.

How to kill weeds in corn by use of chemicals has been known for a relatively short time. In fact, O. C. Lee, weed specialist, says it was just ten years ago that 2,4-D was first used to knock out weeds in growing crops.

Since then, spraying with 2,4-D has become a general farm practice. It's been most practical and economical in fields where smartweed, cocklebur, horseweed, ragweed, morningglory, bindweed, pigweed, Jimson weed and other broadleafed weeds are persistent.

The use of this chemical has also been considered an emergency measure where weeds threaten to ruin the corn crop during periods of wet weather when cultivation is impossible. However, in most cases spraying with 2,4-D is not recommended for the purpose of replacing ordinary cultivation, but for use where cultivation alone fails to control weeds adequately.

It's estimated that five per cent of the corn grown in Indiana, or about 230,000 acres, are sprayed annually with 2,4-D. Considering an average increase of nine bushels per acre from adequate weed control, Lee figures spraying adds more than two million bushels of corn to Indiana's annual harvest.

Purdue University

It's More Than Crop Insurance

If irrigation is to be used, it must be an integral part of the farm plan....

Condensed from Soil Conservation

T. H. Quackenbush

IRRIGATION SPECIALIST, SOIL CONSERVATION SERVICE

DROUGHTS long have plagued the so-called "humid area" of the Eastern United States. The years 1951, 1952 and 1953, produced severe and widespread droughts. Farmers clamored for sprinkler irrigation systems to save their crops. Many of them purchased systems that were not specifically designed to fit their farms — makeshift systems put together to meet an emergency. In many cases they saved crops and to large extent paid for themselves in one year. In other instances, systems were purchased only to find that the farm pond didn't hold enough water for irrigation.

Large investments were made in irrigation systems that with reasonable maintenance should last at least 20 years. What about the 15 to 18 years in between the droughts?

"I have my irrigation system in the barn; when it gets dry, I will irrigate and save my crop," is the typical answer of many farmers.

"I have crop insurance now; when it dries up I can pour on the water," is another common remark.

Certainly, such a farmer has "crop insurance." But he also has a lot more. Through the proper use of his irrigation system he can **control the moisture in the soil.** Not only can the disastrous effects of severe droughts be eliminated, but crops can be produced each year under optimum moisture condi-

Reprinted from Soil Conservation, Washington, D. C.

tions. This means greater yields and better quality.

Several studies of rainfall records have revealed that periods of moisture deficiency occur in the humid areas much more frequently than is usually recognized. This means that nearly every year there may be one or more times when plants suffer to some degree from lack of moisture. A deficiency is not always revealed in the appearance of the plants, but it does often affect production and quality. This sort of thing can be prevented if irrigation systems are properly used.

The farmer who stores his system in the barn, waiting for his plants to wilt, hoping for the rain that doesn't come, certainly loses his chance to gain the extra production and better crop quality that follows irrigation in accordance with the needs and capacity of the soil.

The farmer who has invested in an irrigation system and desires maximum returns on his investment must become an **irrigation farmer.** Irrigation farming certainly involves a lot more than putting on some water when the crops begin to wilt from lack of moisture.

An irrigation farmer who wants maximum return from his irrigation system should consider the following items—

(1) Types and varieties of crops grown: Are the crops that will pay best under irrigation now being raised? Do I have enough varieties so that not all crops require water at the same time? Now that I have adequate moisture, can I increase yields?

(2) Soil fertility: Have I built up the fertility of my soil so it will produce maximum yields under irrigation? (Good fertile soils will pay better under irrigation than poor depleted soils.) Have I planned for additional fertility measures that will be required since yields will be greater? Are my rotations adequate to maintain fertility?

(3) Soil and Water Conservation: Have I completed all necessary conservation measures to hold my soil in place and utilize all of the rainfall that I can? (It is cheaper to hold an inch of rainfall on the land than to pump an inch through a sprinkler system.) Is my soil properly drained? Will my drainage system adequately handle the extra load that may be brought about by adding irrigation water just prior to a heavy rain? (Crops that get a late start in the spring and are partially drowned out by early moisture will not give maximum yields under irrigation.)

(4) Irrigation water management: Do I know how much water my soil will hold? Do I know when to irrigate? (Plants will show stress even prior to reaching the wilting point. If you wait that long to start irrigation it is too late,) Do I know

how much water to put on? (Plants with different root depths may require different amounts of water.) Do I know how fast to apply the water?

(5) Labor requirements: If the irrigation farming is done right it is work! Should I plan can increase the yields from my better land, how about retiring that poor land that should be in grass?

These are only a part of the the questions that will confront the irrigation farmer in humid areas. Consult your local soil

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emulsion form of malathion is used, one-half pint will make three gallons of spray.

Baits are made by using one cup of 50 per cent emulsion, one cup of molasses and three gallons of water. Three gallons will be enough for a 20 to 30 cow herd.

There are some distinct disadvantages to a wet bait, however, Janes says. It has to be applied about every seven days and is slippery before it dries. It is not effective in dark barns and the malathion may become weaker but the molasses may attract more flies without killing them. James emphasizes that malathion should not be used in the home or milkhouse or be sprayed directly on the cattle. Users should read the labels on the containers carefully before using this chemical.

Michigan Extension

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(5) Labor requirements: If the irrigation farming is done right it is work! Should I plan to operate 24 hours a day or only 8 hours? (Remember, it takes a system three times as big to do the job in 8 hours as would be required for 24-hour operation.) Do my movement schedules fit into my other farming operations? Will I need to hire additional help?

(6) Retirement of poor land from cultivation: Now that I can increase the yields from my better land, how about retiring that poor land that should be in grass?

These are only a part of the the questions that will confront the irrigation farmer in humid areas. Consult your local soil conservation district to get help in planning your irrigation system.

Irrigation, in order to succeed must be an integral part of a conservation farm plan. It may necessitate several changes in present farming operations. Know what these changes are going to be before you purchase. Investigate before you invest!

Malathion Keeps Barns Free of Flies

After trying methoxychlor and lindane to control flies in dairy barns, farmers now have another promising insecticide for that purpose. Malathion, a phosphate type insecticide, is the newest one recommended. It can be used as a bait or as a wall and ceiling spray according to Ray L. Janes, extension entomologist.

The barn recipe calls for one pound of 25 per cent wettable malathion powder to three gallons of water. If the 50 per cent emulsion form of malathion is used, one-half pint will make three gallons of spray.

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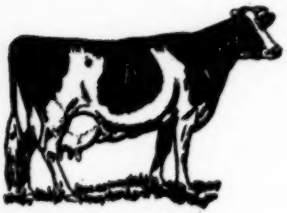
Michigan Extension

Four Heads Are Better Than One

Good cows and smart management move these dairymen ahead. For $100 in feed, cows have returned $264. . . .



Condensed from Capper's Farmer

Clyde Zimmerman

THE four sons of Christ Melius don't go along with the old saying that too many cooks spoil the dinner. They have mixed four minds and 260 acres with a skill that provides a very palatable living for 15 people. Last year their operation in Washington county, Wisconsin, grossed $45,000, netted $20,000. For 2 years in a row theirs was the top farm in labor income in the Southeast Wisconsin Farm Management Association which has 205 members in eight counties.

Edwin Bergstrom, farm management fieldman, says that while 260 acres isn't a big spread, the farm is large enough to utilize machinery and labor efficiently. Other reasons for Melius progress, he says, are: (1) they have achieved a 20 percent increase in production per acre since 1946; (2) they have a grade-A milk market; (3) butterfat sold per cow has been raised more than 60 pounds in 7 years; (4) their eggs aren't in one basket. They diversify with dairy cows, purebred cattle, cash crops, hogs and poultry.

The partners—Edward, Harry, Arthur, and Fred—are getting set to rent an additional 100 acres. Rent—and then buy—that has been the story of the partnership. It began in 1938 when Edward, the oldest (he's 37) rented the 100-acre home place from his dad. Christ Melius liked the rental idea. He was getting on toward retirement. Eventually the farm would go to the boys and his two girls. This promised a gradual shift in ownership that would be satisfactory to both generations.

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One by one Edward's brothers finished high school. They worked at jobs in the community, took a look around at what the world had to offer. Harry came in with Edward in 1942. Then Arthur joined. Fred, the youngest, rounded out the partnership in 1947. Incidentally, their written contract contains a buy-and-sell agreement. If one of the partners dies the others have first chance to purchase his interest.

In these years all except Fred married. More land was needed to support growing families. In 1946 they rented 80 acres which adjoined the home farm. This became Edward's home. The next year they rented a second 80 acres just across the road from Edward. Times were good, and they bought both 80's, putting a $5,000 down payment on the second farm last spring.

It took good management and thrift, as well as good fortune, to make the Meliuses landowners. Cows, they decided in the beginning, would be the largest single enterprise. Records—the partners are careful bookkeepers—proved this to be a wise decision. In 1952 the books show that for $100 in feed, cows returned $264 compared with $135 for hogs and $125 for chickens. Grade-A milk brings in 55 percent of the total Melius income.

Thirty cows are handled in a remodeled horse barn on the home place where Fred lives with his parents. Usually Harry and Fred milk together. Remainder of the herd is milked at Edward's place. The chore takes each pair about 80 minutes.

After watching Edward and Arthur milk I told them it would be fun to make a time-and-motion study of the operation. Edward grinned. "We don't get in each other's way."

They don't. Cows are handled without excitement. Grain is in the manger from the previous milking. It takes about 45 seconds for a cow to let down after her udder is massaged and teat cups are on. One man operates two units, while the other carries milk, feeds calves, throws down hay. Cows milk out in 3 or 4 minutes.

I noted that they didn't strip.

"We figure it's a waste of time," Arthur said.

Not much is overlooked that will save work. They use a feed cart, drop hay into mangers through chutes, set cans in a cooler recessed into a concrete floor, handle cans and milking equipment with another cart.

Milk is sold to the Golden Guernsey Cooperative, largest distributor in Milwaukee. The partners get a 3½ percent dividend which amounted to $1,600 last year. Milk base price is figured on production from September thru December. So

the Melius cows freshen in the fall. They use their own herd sires, proved a bull last year. Fat average for the herd now is just over 400 pounds.

All but three animals in the herd are purebred Holstein. Usually there are 40 to 50 younger animals quartered at the third farm. Sale of surplus heifers brings an extra income. Last year they got $530 apiece for heifers at a consignment sale.

A good cropping and fertilizer plan has upped yields. They follow a 5-year rotation—corn, oats (or canning crop) and 3 years of alfalfa, bromegrass and ladino. They had some 100-bushel oats last year. Corn didn't run high in 1953, but hitting 100 bushels isn't unusual. Canning crops like peas, red beets, or sweet corn give high income an acre. Last year they netted $100 an acre from 22 acres of peas, $200 an acre from beets. Acreage of these canning crops must be contracted for and is limited. To grow beets, they must also take peas. In some years the partners have netted $100 an acre from White Dutch clover seed.

Hogs and poultry are side lines. Harry and Edward each have 250 layers. Most eggs are sold to customers who drive out to the farm. Forty-six hogs were in the Melius lots last summer, and four sows farrowed in the fall.

No idea that will cut costs is too small or too big to be considered. Last summer they bought sweet corn silage at $5 a ton from the nearby canning plant at Jackson. They saved $30 a ton by curing corn directly in farmers' fields. A few years ago they bought a hay crusher, which saves a day in drying at each cutting. Last year they spent $5,700 for a 12-foot self-propelled combine, decided it would save hiring small grain harvested they they could do some custom work. For 3 years they debated before spending $1,200 to drain 2 acres.

All equipment is owned cooperatively, and not so many pieces are needed. They have two trucks, four tractors, field chopper, corn picker, combine, two spreaders.

Each partner has his own checking account and each gets a salary of $150 a month. Any surplus at the end of the year is divided. Fred keeps the daybook. Harry keeps the farm management records—the three farms are handled as one unit. There's a separate DHIA record book for the cows at each farm, so Edward and Harry each have one. Edward also keeps the purebred records. Considering farm products used and what it would cost to rent comparable houses in the city, you can figure that the Meliuses had the equivalent of a $7,500 city salary last year.

Farm Fresh Fryers Find Ready Sales

The Browns have built a steady demand for their pan-ready, farm-fresh fryers. . .

Condensed from the American Poultry Journal.

WHEN a grower can make as much merchandising a fryer or turkey as raising it, there is reason for sharp thinking on selling. It is not unreasonable for the favorably located grower to aim at 70 to 80% of his sales direct to consumers. And it doesn't take a lot of money to set up in business. Necessary and expensive equipment can be added piece by piece as the business grows. In other words, those growers who are using a little more brains and fewer muscles will make their profits more certain and enjoy those profits longer.

The Browns of Tigard, Ore., started with $40 and 50 fryer chicks and by careful retailing, made more last year than the average "big time" broiler man raising thousands of chicks every month.

Our point is this. Half the number of birds sold retail make more profit than twice the number sold wholesale and greatly cut financial risk. We have none other than G. T. Klein, poultry authority of the Univ. of Massachusetts as our authority on this point. Mr. Klein speaking at the recent NEPPCO convention in New York went on to point out that once it was not so important to save.

Labor was cheap, willing to work and plentiful. Building costs were low. Now, labor has become such an important feature of a poultryman's success that one large grower recently told me (he has 20,000 layers in Sacramento, Calif.). "The success of any large commercial poultryman today is dependent on the number of full day's work he can get from his labor force in a year." The same applies to the broiler or turkey grower.

Now, therefore, a saving here, a saving there, and selling for

Reprinted by permission from American Poultry Journal, Chicago, Illinois

a little more spells staying in business.

The Edward Browns of Oregon, have solved some of the labor problems. They do all the work themselves. Mr. Brown is a barber. When he made plans for a small barber shop of his own just out of town, his wife suggested, "Two businesses are better than one; build me a little retail store next to your barber shop and I'll sell farm fresh fryers—pan ready."

Ed Brown had his doubts about mixing barbers and broilers, but he built her a small shop 10 by 10 ft. As we have pointed out, they wisely began with a minimum of equipment. A wooden counter, 9 cu. ft. refrigerator (holds 50 dressed and packaged fryers), a picker, hot water tub, hot water heater (used for the barber shop as well) and a sink. The total cost of the shop, including the equipment, came to just $1,000.

Now while all this building was going on two years ago, there was considerable good barber chair speculation as to how Brown would come out. When the information leaked out that he had only $40 left for chicks and feed, several quiet bets were placed that the young couple wouldn't last out the winter. However, these people also kindly offered to take a chicken home now and then just to help the Browns along.

Strangely enough, these people that tried one of the Browns' "Farm Fresh Fryers" soon were back for more. Brown chuckled as he discussed those first days, "There's something about merchandising your product with a good name. That 'Farm Fresh Fryers' painted in big letters on our window really stopped 'em. In fact, we think the name has had a lot to do with our success. That and the fact that we sell cut up, 'pan ready,' we call 'em."

Still watchful of costs, the Browns were raising 1200 birds at a clip in a double garage—converted for the purpose. Wooden batteries, three tiers high are used for growing the birds. A single large battery brooder starts the chicks. The one expensive piece of equipment in the whole growing set up is the installation of a fan for ventilation in the separated brooder room.

When we tell you current sales are better than 200 dressed birds a week, we think you'll agree the $40 originally invested in chicks and feed is paying off.

The Number One Deficiency in Grass Silage is its lack of readily available energy such as that present in concentrate feeds. This fact is a reason why it is important to add 2 to 3 hundred pounds of a reasonably high energy concentrate to chopped grass per ton as a preservative while it is being ensiled.

More Profits Through Soil Testing

Soil testing and fertilizing pay good dividends. . .

Condensed from The Hereford Journal.

. *R. Thomasson,* UNIVERSITY OF MISSOURI

COULD you use more good hay and pasture? Have you thought how testing your soil and fertilizing according to test can give you not only more hay and pasture but more grain also?

Thousands of farmers are doing that very thing. They will tell you that they have received higher pay for taking soil samples than for any other farm activity. Many of them will assure you that the most profitable investment they have made in recent years is money spent for fertilizer when applied to test.

The soil test will show you a number of things about your soil. It will rate the soil as very low, low, medium, high, or very high in such things as pounds of exchangeable magnesium, percentage of stable organic matter, pounds of soluble phosphate per acre, and pounds of exchangeable potash. In addition, it will tell you the degree of acidity which may range from strong to neutral, and it will indicate the pounds of exchangeable calcium, which may range from low to very high.

Let's consider the case of Ed Nichols in Boone County, Missouri. On 50 acres of orchard grass-ladino mixture, 16 acres of blue grass, all of which was given a full treatment of fertilizer according to recommendations from soil testing, and 20 acres of timothy and lespedeza, he carried 45 Hereford cows with their 43 spring calves and 16 yearling heifers. On Oct. 21 when the calves were sold at a feeder calf sale they weighed 617 pounds per head. This is in comparison with a 375-pound average for all calves sold in these sales.

Or consider the experience of James Venrick of Smithville in Clay County, Missouri. In the fall of 1951 he decided that he

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was not getting as much out of his pasture as he should. After taking soil samples of a 16-acre field and having them tested, he applied the limestone and fertilizer as recommended, plowed them under, and prepared a firm, compact seed bed. Early in September he seeded the 16 acres using a mixture of orchard grass, brome grass, and ladino clover with a complete fertilizer as a starter.

The cost was $35 an acre, but the next year (1952) he pastured the equivalent of a mature cow per acre from March 15 to Nov. 1. In addition, he harvested nearly a ton of excellent quality hay per acre.

Then he gave the pasture a top dressing of 50 pounds of chemical nitrogen per acre in the fall of 1951 and another 50 pounds in the early spring of 1952. On March 25 he turned 16 mature cows on four acres of this improved pasture and kept them there until July 1. From the remaining 12 acres he took 20 tons of hay with new growth later which he could either cut for another crop of hay or pasture out.

F. S. Tuggle, banker and farmer of Gallatin, Mo., in speaking of the soil testing laboratory in Daviess County, says, "Fifty thousand dollars is a conservative estimate of the value of the laboratory to the 257 farms using its services this year."

Another method of increasing hay and pasture is through heavy applications of fertilizer on the corn crop. Farmers throughout the state are finding that they can grow their requirement on half the acreage required before they started testing their soil and fertilizing according to test. The remaining acreage is free to be seeded to grass.

Robert Bax of Freeburg in Missouri's Osage County decided to try for a 200-bushel corn yield. The soil test showed that to bring a five acre field up to a 200-bushel capacity, it would be necessary to add 1,725 pounds of high analysis plant food per acre. The cost was $60.06 per acre. This might have scared a more timid man, but not Bax. He followed recommendations exactly. And he harvested $3 worth of corn for every dollar invested in plant food. To state it another way, he had nearly 100 bushels of corn per acre after paying the fertilizer bill. The yield of 140 bushels per acre removed only $20.50 worth of the plant food he had applied. The remainder of the fertilizer application remained in the soil either as chemical fertilizer or in the stalks which were left on the field.

Good Yield Despite Wet Season

In making the phenomenal

yield Mr. Bax turned under a green manure crop of red clover and at the same time plowed down 700 pounds of 33 per cent ammonium nitrate, 325 pounds of 0-46-0, and 300 pounds of 0-0-60. As a starter fertilizer at planting time he used 200 pounds of ammonium nitrate. That was the 1950 season which was extremely wet. With more sunshine and less rain Mr. Bax figured he would have obtained a larger yield.

For maximum yields and for greatest returns per dollar invested in fertilizer, the plant food in the soil must be properly balanced. An excess of one element with a deficiency of another gives poor results. The only safe procedure is to take samples of the soil, have it tested, and then follow recommendations of the county agent.

In taking the soil sample, it is important to follow the recommended procedure. Unless the sample has been properly taken and is representative of the field, the test will be inaccurate. The Soils Department of the Missouri College of Agriculture recommends the following procedure:

Use either a soil auger or a spade. A sharp shooter works nicely. After clearing off the surface trash, bore to a depth of seven inches with the soil auger and place the borings in a clean bucket. A composite sample is obtained by repeating this procedure at least 10 times for each area in the field that may vary in soil characteristics from the remainder of the field.

In case you are using a spade, dig a V-shaped hole seven inches deep and cut a thin slice from the side of the hole and put in the bucket. Whether using a spade or soil auger, mix the 10 samples thoroughly in the bucket and take out about a tea cup full to be placed in a pint-size ice cream container or heavy paper bag. It needs to be labeled so that when the test comes back, you will know what part of the field each test represents. Take a composite sample from each area in the field which is definitely of a different soil type, color, elevation, slope, known difference in productivity, or where the cropping or soil treatment has been different. In recommending soil treatment the agent needs to know all the information possible on the past history of the field including the rotation followed, soil treatment, etc.

County Agent M. J. Hatten of Texas County, Missouri, tells us about the soil testing laboratory at Houston, Mo.:

"The establishment of a soil-testing laboratory in the county has done more to bring to the attention of farmers the deficiencies of soil nutrients than any step undertaken in a dec-

ade. This method of determining the presence and extent of the major plant food elements has been made possible through co-operation on the part of local people. Nineteen individuals including businessmen, civic groups and co-operatives contributed $675 which made possible the establishment of the laboratory. During the first season we averaged more than three tests a day."

* * *

While butterfat averages for main dairy breeds are: Jersey—5.3 per cent; Guernsey—5 per cent; Ayrshire—4 per cent; Holstein—3.4 per cent, individual cows of the same breed will vary widely in their butterfat production.

* * *

Since 1948 some 302,000 soil samples have been tested in the 89 county soil-testing laboratories for a total of 138,000 farmers. Assuming that each sample tested represents an average of 10 acres, this would mean a total of 3,000,000 acres tested during the last six years, or an average of half a million acres per year.

As a result of this more scientific method of using fertilizer, 100-bushel yields of corn are commonplace events. On innumerable farms where the plant food has been depleted, application of recommended plant foods has resulted in doubling yields of corn and small grain. Equally important, and even more noticeable, are the thousands of acres of lush pasture on land that once grew only broomsedge and tickle grass.

Record Hatches Spell '54 Poultry Troubles

Record hatches of chick and turkey poults throughout the nation in January, February, and March spell trouble ahead for the poultry industry, says M. D. Thomas, Oregon State College extension economist. He has warned some Oregon farmers to stay clear of chicks and turkeys in 1954. Others who manage carefully and take advantage of large barley supplies expected this summer may have "something left after bills are paid," the economist states.

The January chick hatch in important poultry states such as Indiana was 30 percent above January 1953 and nationally was 10 percent higher. Turkey poult hatches shot even higher with a 67 per cent national increase in January, most of the gain coming in lighter-weight breeds.

Oregon State College

ARE THESE FIRE HAZARDS IN YOUR HOME?

Careful and frequent checking reduces fire losses. . .

Condensed from the Missouri Ruralist.

HAVE you checked your farm for obvious fire hazards? Perhaps you are tolerating several dangerous practices without recognizing them. How would you like to have trained safety technicians inspect your farmstead?

This is a free service being offered by the Farm Bureau Mutual Insurance Company of Jefferson City, Missouri, a company operated by the Missouri Farm Bureau Federation. Two technicians have inspected farms in 19 counties of the state this year, checking for fire hazards in co-operation with the owners.

What are the more common fire hazards found on farms? Recently, we went along with Lawrence Chatten, one of the 2 technicians, as he visited several Cole county farms, just to see first-hand how an expert locates fire hazards.

Mr. Chatten reports that different sections of the state have different common hazards. In Southeast Missouri inferior electric wiring is the No. 1 hazard. But in North Missouri counties he found defective flues most common.

These 2 things were among the 3 most common fire hazards everywhere—the other is termed "poor housekeeping" by Mr. Chatten. He uses the term housekeeping to include a long list of things, both inside and outside the home. Trash littered under the house, oily rags in closets, magazines and books on stairs, inflamable material in attics, all these are hazards in housekeeping.

We were surprised to learn improper storage of gasoline is very infrequent. Apparently most of us are aware of the danger of storing such a material close to buildings. Mr. Chatten finds little gasoline stored in buildings.

Reprinted by permission from the Missouri Ruralist, Topeka, Kansas

At one home we found some paint cans in the attic—but it was a water base paint and not dangerous. Mr. Chatten suggests storing oil paints outside the home—and sealing the cans tightly. A paintbrush in an open can of thinner or cleaner is a hazard, too.

* * *

Records show that it costs nearly as much an acre to produce low or average crop yields on a given soil type as to produce yields 20 to 40 per cent above average.

* * *

One hazard can be found in most homes — long extension cords. In each of the homes visited Mr. Chatten neatly wrapped up extra cord so it could be handled more easily. Many of us are careless about defective plugs and wires, too.

Mr. Chatten carries a supply of fuses with him. He hasn't found many pennies used in fuses, but he has found fuses that are too heavy. The type fuse he gives patrons free of charge has a spring that will trip when the line is merely overloaded. If there's a short in the line, the fuse burns out.

He has words of praise for installations of L-P Gas he has checked. In practically every case installations have been made by competent service men. Apparently farm families are aware of the potential danger, are quick to get skilled help.

In making L-P gas installations, tanks holding up to 500 gallons must be at least 10 feet away from buildings, tanks of 500 gallons or more must be 25 feet away from building. Bottles or cylinders may be against the house but should be mounted on concrete base.

Such things as L-P gas, gasoline and electric wiring all are obvious hazards. A very dangerous material often present is common dust, according to Mr. Chatten. Cobwebs around lights are a source of danger. He suggests cleaning out around the motor of an electric refrigerator once a year. Some of the most severe explosions are caused by dust.

These safety technicians are visiting patrons of the company by counties. Most farms folks welcome the inspectors—they're happy to co-operate. We become accustomed to our surroundings and really can't see hazards quickly obvious to a stranger looking over our farmstead with a critical eye.

Naturally, the company hopes the inspection will make for safer risks. A copy of the inspectors report on every farmstead is sent to the company. Mr. Chatten finds in many cases farm buildings are underinsured. If you haven't built anything lately, you may not realize the extent of rising building costs.

Something For The Boys

Here's father-son farming with the stumbling blocks smoothed out. . .

Condensed from Capper's Farmer.

Clyde Zimmerman

SUPPOSE you were 19 years old and share-renting a 200-acre farm from your dad, just down the road from the home place. And suppose that dad had a "push-button" granary with automatic equipment to take most of the work out of handling grain and feeding livestock.

And let's say that at this stage of the game you were a little short of everything except the will to work. Wouldn't you feel more like doing a good job of farming if dad said: "Let's change things around so you can feed out cattle at my lots and we'll both pasture steers at your place."

This kind of thinking and planning explains the co-operation and good feeling you sense in the farming operations of Forest Loudenslager and his two sons, Don and Roy, in Marion county, Ohio. Don is 19. Roy, 17, graduated from high school last spring.

Both boys were pretty sure they wanted to farm. Any doubts they might have had are being taken care of by the way Forest is helping them get started.

Roy rents a 226-acre farm from his dad, 1½ miles from the main farm. He has the land in small grain and hay crops. Don share-rents another nearby 240 acres.

When I visited the Loudenslagers, both boys were still living at home and the breakfast table was the favorite spot to map a campaign.

Listening to the boys and Forest plan how they would handle the day's chores, I wasn't surprised when Don told me that the work gets done without a lot of hired help. They have one hired man and the four of

Reprinted by permission from Capper's Farmer, Topeka, Kansas

them do the work on 1,100 acres.

Roy and Don have an equity in livestock built up thru FFA projects. And they own one-fourth interest in all portable equipment. Don, for example, owned two tractors when the three went together.

The boys each get one eighth of the income. Forest gets a fourth and the remainder—one half—goes back to the farms to take care of insurance, taxes, repairs on buildings, and other expenses.

Roy and Don feel that for the time being they are better off than if they were landowners. Each isn't struggling on his own, with a set of equipment and everything that goes with it.

A new granary on the home place is an example of how three heads can be better than one. Everyone put in some ideas. The building, 84 feet long and 29 feet wide, holds 11,000 bushels of ear corn and a like amount of small grain.

There are many work-saving tricks in the granary and you can understand why Roy and Don are tickled to have it. On one side is the crib section, 29 by 48 feet. In it is a drag trench and just over it, running the full length, is an A-frame duct. Opposite the driveway end of the duct is a 42-inch fan and motor.

Sides of the granary aren't slatted so drying fans run some every year on ear corn and, if necessary, on small grain. There are 13 bins, 9 of them overhead. Between floors there is a power-operated lift. A burr mill sits in the floor over the driveway and is belted to two 7½ hp motors.

Getting out feed is a one-man job. You switch on the grinder and elevator, start the drag, and work ears into it. A transmission slows the drag to a speed the grinder will handle.

Last year the Loudenslagers fed out 200 cattle, 1,100 lambs, and 200 hogs. Silage is important and again the idea is to make feeding easier. In 1952 they used a trench silo 110 feet long. It held the feed from 27 acres of corn.

Both boys got a hog start with a gilt from a pig club sponsored by the Marion Chamber of Commerce. Roy and Don now own 20 sows in partnership with their dad. They are feeding out 170 shotes this winter.

"When Roy and Don showed an interest in hogs I stopped buying them," Forest told me. "I didn't want to risk bringing home disease that would hurt the boys. Later on, if they think it is OK to buy pigs again, I'll do it."

BAND SEEDING IMPROVES LEGUME STANDS

There are many advantages to be gained from band seeding. . .

Condensed from the Eastern States Cooperator.

James H. Eakin, Jr., EXTENSION AGRONOMIST,

PENNSYLVANIA STATE UNIVERSITY

BAND seeding is a superior method of obtaining better "stands" of grasses and legumes by precise placement of seed in reference to fertilizer bands. This seeding method was first developed by the Ohio Agricultural Experimental Station and at present is being successfully used by thousands of farmers in the Midwest and Northeast.

Advantages — Band seeding's advantages far outweigh its disadvantages.

- Only two-thirds as much legume seed and only one-half as much grass seed is required for band seeding as is needed for broadcast seedings.
- The shallow soil coverage in band seeding results in better germination and emergence.
- In this seeding method, fertilizer is more efficiently used by young seedlings. The individual plants get off to a fast start and are better able to

Reprinted by permission from the Eastern States Cooperator, Springfield, Mass.

withstand adverse conditions such as drought.

- With band seeding, legume and grass plants are fertilized, weeds are not.
- The fertilizer and seed are dropped in one application.
- It is inexpensive and should not cost more than $15 to rig a drill for band seeding.

Disadvantages — Band seeding is a precision arrangement to drop legume and grass seeds where they will have the greatest opportunity to germinate and grow. If care is not taken to rig the drill according to directions, it has no advantages over ordinary broadcast seedings.

The band seeding operation should place fertilizer and small grain about ¾-inch below the soil surface. On heavy clay soil one-half inch would be sufficient and on lighter textured soils 1½ to two inches would not be too deep. This depth is controlled by the setting of the discs or hoes. Place the legume seed—and if possible the grass seed too—on the soil surface directly over the fertilizer band. The seed delivery tubes should track with the movement of the discs or hoes. The legume and grass seed should be discharged not less than 10 inches and not more than 16 inches behind the rear cutting edge of the disc or the trailing edge of the hoe. The distance seed should be discharged behind the discs or hoes depends on how fast the tractor is driven. If the discharge end of the hose is not more than 10 to 12 inches behind the discs or hoes, the tractor should never be driven over four miles per hour. Care must be taken that the legume seeds are never covered over one-half inch deep.

For each disc or hoe on the grain drill you will need:

1. About 40 inches of ¾-inch garden hose or the regular steel ribbon tubing made for band seeding.
2. About four feet of pipe hanger strap metal (14 gauge, one inch—the heavier the better). This can be purchased at hardware or plumbing store.
3. Three machine bolts 1½ by 3/16 inches.
4. One eight-penny finishing nail (short length of wire will do).

In mounting the garden hose to the seed box, remove the regular discharge tube. Mount the garden hose directly to the short spout connected to bottom of grass seed box. Slip the garden hose over the spout and drive the eight-penny finishing nail through the hose and pipe. Bend the ends of the nail around the hose to hold it securely.

Next, form the pipe hanger strap metal to receive and hold

in place the discharge end of the seed tube. Obtain a rod with the same diameter as the garden hose (a broomstick will do). Place the rod in the middle of the length of strap iron and bend it around so that the ends meet. Pound the strap iron on both sides next to the rod to form an opening to receive the garden hose.

Next, connect the open ends of the strap iron to the eye in which the drag chain normally fits (drag chain should be discarded). Secure with a machine bolt. Bring garden hose down through the opening just made in the strap iron.

The final operation consists of connecting a diagonal brace from the rear of the strap iron to any point above on the drill boot where it can be secured with another machine bolt.

For ease in rigging the drill, it would be best to rig one disc or hoe, then cut all the remaining lengths of hose and strap iron at the same time.

Adjust the discharge ends of the hose so they will be about 1½ inches above the soil surface. Take the drill out for a trial run with someone riding or walking behind the drill to see that every hose is discharging properly.

Band seeding in oats — The oats and fertilizer are drilled in the usual manner. Large seeds like orchard grass can be mixed with the oats. The legume or legume-grass mixture from the grass seed box is placed directly over the fertilizer bands. A land packer need not be used after seed has been drilled. A firm, well settled seedbed is desirable, but not absolutely necessary.

Any rate or grade of fertilizer can be banded safely providing there is one-half inch or more of soil between the fertilizer and the seed. Many farmers have been plowing down 300 to 500 pounds of 0-20-20 and banding with 300 pounds per acre of 4-12-12 or 5-10-10. Others have been banding with 300 to 600 pounds per acre of 5-10-10 or two-thirds as much 8-16-16.

Spring seedings are benefited by early planting of the oats. For the best results use only one bushel of oats per acre so as to reduce their competition with the seeding. The small grain stubble should be clipped immediately after harvest and everything removed, or the combined straw should be removed at once and the stubble clipped in August.

Band seeding in August— The band seeding method as described for oats should be used. However, no grain companion crop should be sown. A firm, well settled seedbed is essential for August seedings. A summer seedbed should be completely prepared, including land-packing well in advance of the ac-

tual operation. The band seeding may then be made immediately after the first rain without further seedbed preparation. Usually a land-packing operation immediately after seeding is desirable.

Band seeding in winter grains—When wheat or barley land dries out early enough in the spring to carry machinery, band seeding has proved to be a worthwhile operation. However, it would be better to broadcast seed on wheat ground early rather than taking the chance of waiting to band seed. In other words, band seeding on winter grain has proved to be of most use when broadcast seedings are unavoidably delayed.

To band seed on winter grain, it is not necessary to rig the drill completely with garden hose. Insert the tubes from the grass seed box directly into the fertilizer chutes. Let seed and fertilizer drop in the same drill mark. The discs should just scour over the ground.

Use only 200 pounds per acre of super-phosphate. **Do not use a complete fertilizer for band seeding on winter grain.**

Cautions

- Drop discs of grain drill **before** garden hose is attached.
- Do not attach garden hose to a board behind grain drill. The hose must float with the discs.
- Be careful that strap metal does not become bent during drill operation. If this happens seeds will drop to one side of the fertilized bands, and not directly over them.
- When band seeding legumes on wheat or barley in the spring, use only 200 pounds per acre of 20% superphosphate. Do not use a complete fertilizer.
- For best results do not drive faster than four miles per hour.

Return of the Chestnut

Farmers may soon begin planting chestnut orchards—and making money at it—thanks to research conducted by the U. S. Department of Agriculture.

USDA scientists have developed a new type of chestnut, a cross between the Chinese and American varieties, which is resistant to the fungus blight that 30 years ago all but wiped out domestic trees. The Chinese-American cross, they point out, is suitable for timber purposes. For nut production alone, the blight-resistant, pure Chinese strain is recommended. Trees planted now will begin to bear fruit about the same time as the world supply of chestnuts diminishes because of blights that are wiping out European orchards.

Don't Sell Poultry Pasture Short

On a good poultry range you can raise healthy pullets at lower cost...

Condensed from Poultry Tribune.

Joe W. Sicer, PURDUE UNIVERSITY

IF A NEW antibiotic was placed on the market with claims backed by experimental evidence that feeding it would result in better pullets, a higher egg production during the first laying year, and a saving in the feed cost of growing a pullet, you and many other poultry raisers would rush to buy it.

That is exactly the case that can be presented for a good poultry pasture, properly managed.

Recent tests at the Vermont Agricultural Experiment station show that a saving of more than 14 per cent in feed was obtained from birds on pasture under restricted feeding when compared to pullets raised in confinement. Fifty dollars worth of purchased feed, actually 1,060 pounds, was saved for every acre of a pasture that supported about 500 pullets.

The Ohio Agricultural Experiment Station reported a 5 per cent higher egg production and larger eggs from range reared pullets. The mortality of the range reared pullets during a 44-week laying period was 11.3 per cent compared with 21.5 per cent for confinement reared pullets.

True, there have been some experimental trials where pullets raised in confinement or in bare lots did just as well as those that had good pasture. But the bulk of research and field observations points to the fact that properly managed pullets on good pasture can be raised with lower feed costs and can be expected to possess more dependably the vigor and good development for top egg production.

Pullets on good pasture get an abundance of all the known necessary vitamins, including vitamin D which they garner from the sunshine while eating the pasture. They also get a supply of a number of other nutritional factors which we know little or nothing about.

Much of the feed saving made

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possible with good pasture is not merely that the grass replaces other feed. Tender, succulent grass replaces the most expensive part of the ration. Less mash can be fed in proportion to cheaper grain. Mashes with a low protein content and correct mineral balance, but without expensive vitamin fortification, can be used satisfactorily.

Perhaps you are a poultryman who says, "Pasture is fine if you can have it, but I start pullets early. By the time pastures are ready my pullets are about ready for the laying house."

In such a case, remember two things. First, with a well established and fertilized pasture of ladino or blue grass sod, good feeding can be available by April 1 or earlier in many parts of the Midwest and the East.

Second, the greatest saving in feed comes when pullets are pastured between 16 and 24 weeks of age. Previous to that time, according to the Vermont trials, the feed saving was not great. This also emphasizes the need of having the kind of pasture available which will give an abundance of succulent forage during this period of the pullets' growth, no matter when they were hatched.

Good pasture calls for careful planning. The details will be different on every farm, but the following principles have been proved sound.

A good poultry pasture will:

1. Provide for separation of the old and young chickens. That is the first commandment in a successful sanitation program. It is particularly important in the control of leukosis.

2. Provide an abundance of tender, succulent forage over a long season.

3. Provide a thick sod that can be maintained in spite of the wear and tear from the foraging chickens.

4. Provide for a rotation so that each year the pullets will be on fresh ground that has been free of poultry and poultry manure for at least a year. Some leading poultry authorities maintain that plenty of succulent grass and a good sod are of even greater importance than the rotation, but if you have had any trouble with round worms in your birds, stick to the rotation.

Unfortunately, on many general farms, the feeling seems to be that when chickens are turned loose and given "free range" they get all the pasture they need. But such a practice usually falls down on at least three of the above named requirements. It seldom provides for a separation of the old and young birds. It does not provide for a rotation, and it seldom provides succulent green feed over a long season.

Sometimes good poultry pasture can be found by using the clover field in the rotation. The weakness is that on most farms, at least half of the time the clover field is too far away from the farm buildings.

A much more satisfactory arrangement is to set aside, close to the dwelling, enough land to provide pasture primarily for the growing pullets. It should be well drained and should not be contaminated by surface drainage from other areas used by chickens. It can include a rotation of corn, oats, and ladino clover. Or, it could be two fields of ladino used on alternate years for the pullets.

If the pasture is located close to the farm buildings, water may be piped underground to the field outlets and a plastic or steel pipe water system laid on top of the ground in the pasture. The area can be fenced to keep out predatory animals. In Indiana, foxes have been kept out successfully with a strand of charged wire one foot above the ground and one foot out from the fence.

Ladino clover, by itself, remains the favorite poultry pasture in many states. It gets green the earliest and produces succulent forage in abundance over a longer season than any other pasture crop under most conditions in the Midwest and East. It needs a full year to become established before being pastured by poultry, but once the runners are well rooted, it can carry more pullets per acre than other clovers or grasses. Five hundred pullets per acre are usually recommended, but many poultrymen range 1,000 or more birds per acre.

Some folks prefer a mixture of ladino and brome grass. Blue grass and white clover make excellent sod, and, when limed and fertilized, it will make excellent early pasture. However, it can not be depended upon in midsummer in the Midwest.

Where alfalfa can be grown, it, too, makes a good poultry pasture but it does not have the recovery power after clipping. When it is seeded in a mixture of alfalfa and ladino, the alfalfa will be left standing by the pullets.

Orchard grass is good if it is kept clipped. Timothy and bird's-foot trefoil mixture produces an abundance of forage.

An established sod is always preferred to temporary pastures. The perennials are more dependable for forage and the sod itself is a decided aid in creating good conditions for sanitation.

Annuals, such as oats, wheat, rye, sudan grass, or rape can be used in emergencies, but they should be considered only when established sod is not available.

Regardless of the crop, much depends on good pasture management. The correct number of birds per acre will vary great-

ly with fertility and climatic conditions. Close grazing stimulates new growth, but the concentration of birds should not be so heavy as to kill out large areas around the houses. Fertilization in accordance with the recommendations of the local county agent is a good investment.

Poultry pastures should be clipped frequently. Clipping keeps down weeds and stimulates fresh new growth. Clip "knee high to a pullet" is a good rule to follow.

Feed troughs should be "walked" around the pastures by moving one end of the trough every day when refilling. Waterers also should be moved frequently. With automatic waterers this is accomplished easily by means of a length of hose. These practices help prevent tramping out of the sod and avoid an accumulation of manure around the feeders and waterers.

Feed Restriction May Be Necessary

To get the greatest advantage from pasture, some program of feed restriction seems essential. The usual practice is to give the pullets all they want of grain and mash at their late afternoon feeding with just enough left over to give them a start the next morning. The rest of the day they eat pasture. This restriction apparently should not be more than about 15 per cent less than they would eat if given free choice. Greater restriction may result in slower growth.

Culling Poor Cows Saves Dairy Feed

One way to stretch short dairy feed supplies is to feed only the best cows, says C. D. McGrew, Ohio extension specialist. McGrew points out that better cows will return more for feed than cows that should be culled from the herd. He calls it "false economy to refuse to cull a dairy herd because declining beef prices have lowered cull cattle prices."

Getting maximum milk output per cow helps keep down production costs per pound, the specialists says. Most efficient way to handle low producers is to cull and sell. The first step in culling is a system of complete herd records, convenient to use. Under usual conditions, a cow producing 5000 pounds of milk or less a year will not pay for her feed and other overhead and show a reasonable labor profit. Low producers of this kind will raise the production cost per pound of milk as long as they remain in the milking herd, McGrew says.

University of Ohio

Do You Need A Lawyer?

Farmers should be familiar with legal practices in buying and selling property. . .

Condensed from the Dakota Farmer.

WHAT is a real estate title, an abstract, a title examination? Is possession nine points of the law? Does examination for a mortgage lender protect a purchaser? Is a warranty deed from a responsible party adequate protection? Do you realize the importance of earnest money contracts, and are you fully aware of the technical operation of closing a real estate deal?

These questions are answered briefly in a pamphlet prepared as a public service by the Public Information Committee of the State Bar of South Dakota. It seeks to show why it is hazardous for the average property owner or prospective buyer to try to interpret any law without the aid of a trained expert. Included are answers raised by many farmers. Questions and answers follow:

What Is a Real Estate Title?

A real estate title is a claim of ownership or right to land. If you can prove your title against all the world, it is a good title. If, in addition, the evidence of your claim of ownership is contained in proper public records, it is good record title. Ordinarily only a good record title is salable.

What Is An Abstract?

An abstract is an outline of the public records relating to the ownership of a tract of real estate.

The possession of an abstract is no indication of ownership of the land to which it relates. Abstracts are made by skilled persons from public title records. Any person may purchase an abstract of any piece of land. The cost may be small for an abstract of a valuable tract or the cost may be large

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for an abstract of a worthless tract. Its price depends upon the number of transactions which the abstract shows. An abstract purchased by the owner of the lot may be lost; it may be held by a mortgage lender; or it may have been loaned to a man who at one time intended to buy the land. Mere possession of an abstract by one claiming to be the owner, or by anyone else, is no indication of ownership.

What Is A Title Examination?

A title examination is a careful study of the abstract and sometimes other title evidence. When it is completed, the attorney gives a written opinion stating his conclusions as to who owns the land, the defects in or charges against such ownership, and the requirements to be met, if any, to make good record title. Offhand this may seem a simple operation. In fact it is not. It requires the interpretation of numerous deeds, mortgages, wills, court decrees, and other instruments; the consideration of the order in which transactions and events affecting the title occurred; and the application of statutes and court decisions to the various situations disclosed in the abstract.

Because the abstract does not show certain matters, for example defects in survey, or questions relating to survey, easements and mechanics' liens which may not be on the public records, and thus not in the abstract, the opinion on the title examination sometimes mentions these so the person to whom the opinion is being given will have them in mind.

Because the examination of a title requires a thorough knowledge of so many phases of the law, it cannot be done by anyone except a lawyer. An examination of a single abstract may involve consideration of a variety of problems such as the validity of divorces, the effectiveness of foreclosures, the seriousness of restrictions, the danger of federal or state tax liens and the effect of old claims against the land. From examining the United States patent to passing on the last deed, the process is at every step the solution of legal problems. Experience can speed up the work, but every day attorneys encounter new situations which require legal training and research.

How About Possession?

Is possession nine points of the law? Well, yes and no. It may require a court action to dispossess the occupant of land. It is also true that, with certain other factors present, long continued possession of land may give the occupant legal ownership; however, there are many situations where it does not. For example, a tenant can remain in possession for a life time without getting ownership. A squat-

ter never gets title unless he meets certain tax requirements. An heir in possession ordinarily acquires no title against his co-heirs.

In any event, title based on adverse possession is not a good record title until a court action has been brought and a decree properly recorded; until then it is usually not salable. This procedure is generally called "quieting title."

The danger of relying upon a seller's possession as proof of title is apparent. A purchaser may enjoy his nine points while the lawsuit lasts, but may find himself ousted by the 10th point.

Purchaser Protected?

Does examination for a mortgage lender protect a purchaser? Mortgage lenders usually have titles examined. The question arises: "Why should a purchaser who is being financed by a loan require an examination in his own behalf?"

Although there are occasions when the title opinion is directed to both the borrower and the lender, when the opinion is given only to the lender it is for his benefit alone, and the borrower has no right to and should not rely upon it. A mortgage lender has an interest different from that of a purchaser. The lender demands a margin of value above the loan. If foreclosure becomes necessary, some expense in perfecting title would still leave him unharmed. A purchaser pays full value and has no margin to which he can charge the expense of perfecting title.

A mortgage lender knows that most mortgages are paid and that small title defects in those cases will not be of any trouble to him. A buyer wants a title which will not trouble him while he owns the land and will not require expense to overcome any defects in the title when he sells it, or trouble his widow if she inherits.

Warranty Deeds

Is a warranty deed from a responsible party adequate protection? If a seller of known integrity is giving a warranty deed, why should the buyer worry about title? There are three reasons why this manner of thinking may lead to sad results. First, a seller of known integrity may be dead or bankrupt tomorrow. Second, the covenants in a warranty deed are guarantees generally concerned with possession, not of marketable or salable title. (A title may be clearly unmarketable but, because the buyer's possession has not been disturbed, he may have no remedy under his warranty deed.) Third, the liability on the title covenants may be completely outlawed before a breach is discovered. Title defects have a way of lying dormant for years and perplexing

buyers long after they have paid for the land.

The backing of a warranty deed from a financially responsible seller is comforting and desirable but is not a substitute for a title examination.

Money Contracts

Do you realize the importance of earnest money contracts? Contrary to the general impression, the signing of an earnest money contract, or earnest money receipt, is the most critical act in a real estate sale. It should crystallize all the terms of the sale and should state what land and fixtures are being sold, what price is to be paid, the terms of payment, the date possession is to be delivered, the quality of title to be conveyed, and the kind of title evidence to be furnished. It may cover who is to pay what taxes assessed or to be assessed on the land, who is to pay the commission of the real estate broker and expenses of obtaining an abstract or bringing it up to date. Every lawyer has been saddened at the prospect of trying to protect his client in a real estate sale when the client has already bargained away his protection in a poorly drawn contract.

A contract signed by the seller and buyer, but not signed by the seller's husband or wife, can be enforced against the buyer, but under some instances cannot be enforced against the seller to the extent of the buyer obtaining the property. Such a contract is a trap for a buyer. His earnest money is tied up and his plans with it. A seller can meanwhile conceivably try to obtain a better price.

An earnest money contract which does not provide for furnishing proper title evidence saddles the buyer with that expense. A contract providing for "good title" does not require a "good record title." A contract describing property by street number only will leave unsettled the question of just how much land is to be conveyed.

Often a mess has been announced by a client to his attorney with the words, "I just signed a receipt. Will you take over and see that everything is O.K.?" Your lawyer can serve you best when consulted before you sign an earnest money contract or pay any money.

Closing The Deal

Closing a real estate sale is a technical operation, even though the actual physical acts seem comparatively simple. The careful drafting of papers to carry out the actual intent of the parties is part of the job. Meeting the requirements in the title opinion is another step. The proper signing, witnessing, and acknowledgment of papers is another. Delivery and recording of the papers and attaching revenue stamps are usually the last steps.

Improvements Unlimited

A mountain-valley ranch wins "Top Hand" honors for its owner. . .

Condensed from Western Farm Life.

Jim Noland

YOU'D never guess that William Benson had been on the place only seven years.

You'd figure he'd been there a lifetime making improvements on the home place, figuring ways of economically feeding his cattle, building up his soil and water conservation achievements, and putting in new fences and roads over vast areas of his 10,000-acre spread at the foot of the Sangre de Cristo range in Custer County, Colo.

A relatively newcomer, Benson and his family have worked hard toward improving their mountain-and-valley 74 Ranch since they moved there in 1946. The effort they've put forth has earned well the regional Top Hand designation in the 1953 Range-Livestock Championship judging sponsored by Western Farm Life and radio station KOA.

The 74 Ranch is home for Benson, his wife, Charlotte, and six of their eight children. The couple's eldest daughter, Zara, is married and living on a ranch not far distant from her former home. Son Bill, 19, is serving in the U. S. Navy in Japan. There's still a plentiful supply of good ranch hands at home, however, from son, Christy, 15, right on down to youngest daughter, Jane, who is four years old.

Hereford cattle raising dominates the operations of the Benson ranch, and about 250 cows and 300 yearlings are usually on hand. A small herd of Aberdeen-Angus is being kept on an experimental basis as Rancher Benson watches the 30 head of blacks to see how they'll do in comparison to his whitefaces. Only other livestock on the ranch are the few head of dairy cattle which supply milk prod-

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ucts for the family, and about 30 head of horses.

Benson keeps high quality registered bulls to gradually improve replacement cattle. He added three new sires to his herd last year.

Disease is kept to a minimum by a full vaccination schedule. Stock cattle are treated twice or more yearly for hemorrhagic septicemia, blackleg and malignant edema. Heifers are protected against Bangs disease. All of the vaccinations are administered by Benson himself, and he vaccinates again before full feeding starts each winter.

The senior Benson buys up calves each fall, feeding them from November until May and then turning them out to pasture. His feedlot ration depends on availability of particular products. Last fall, Benson was using oats and barley. Some alfalfa pellets and protein meal supplement were also on hand for early feeding. Use of beet pulp or bran for a roughage element was being contemplated if supplies were adequate. Later corn and maize would be fed.

Despite a number of abnormally dry years in which water supplies from both mountain and lowland sources were short for most ranchers, the Benson ranch has not been bothered with shortages except for less than normal rainfall over much of the rangeland. That's largely due to careful provision for water supplies and conservation of available surface water.

Water for irrigation comes from the melting snows of the towering Sangre de Cristo Mountains which form the backdrop of the 74 Ranch, and Benson has about 250 irrigated acres of hay land. He's presently doing some leveling in preparation for reseeding to alfalfa.

Stock watering needs are covered by two flowing wells, four windmills and five stock ponds to meet the demand of the cattle.

The water and soil conservation work which Benson has undertaken so successfully on his ranch has been in cooperation with the Custer-Divide soil conservation district. "It's a good district," Benson volunteered as he pointed out improvements on his ranch, "one of the best things we've ever had."

Conservation measures have included land leveling, ditch relocating for better water utilization, and gully control through the use of dams, plugs and diversion ditches.

That work has paid off big for Benson. Custer County has been comparatively dry for the past five years, but the 74 Ranch was in better shape than many of its neighbors. "My yearling steers showed a 275-pound gain on grass," says Benson, "but some of my neighbors ended up with cows looking worse than when they started."

This year, his heifers showed a 250-pound gain and Benson—with understandable pride—noted that "there's still pretty good feed on the back end of the place" as summer drew to a close.

"I believe in this," Benson declared as he surveyed his conservation work. "If I could afford it, I'd have my own 'Cat,' carryall and the rest of the equipment that goes with it."

But the conservation work is only part of the many improvements evident in a tour of the ranch. Roads have been built over the ranch to facilitate good supervision and inspection of each area. Fencing has received a full measure of attention, too, with approximately 14 miles of new fencing—four to six wires—added since Benson arrived.

Ranch headquarters—the Benson home and nearby buildings—are evidence of more long hours of improvement work. An example is the granary, merely an old hull of a building about to topple seven years ago. Rebuilt now to serve the heavy demands of cattle feeding, the granary is supplemented by a feed mixer and its housing which Benson installed.

Living quarters for the Benson family have been changed extensively since 1946. When they moved in, the Benson house was surrounded by bare ground and an old picket fence. Water was inadequate. There was no electricity, and heating was a difficult problem.

Today, visitors find a cheerful and well-kept home with completely modern facilities. The dull gray exterior has been replaced with white; lawn and garden have replaced the bare ground that once surrounded the house; inside, lowered ceilings and redecoration have been major parts of remodeling and improvement; electricity plays a vital role in home life; and an excellent well supplies plenty of water for lawn and garden as well as for household use.

The 8400 deeded acres and 2½ sections of leased land on the Benson ranch are the source of both work and enjoyment. Their never-ending efforts toward improvement are paying off in better year-round ranch living for everyone.

The Ewes Menu — Each ewe in the flock will eat two bushels of corn, or its equivalent and 300 pounds of hay if winter pastures are not available. Five ewes and lambs will require the same amount of pasture as one cow and a half. Shear the breeding flock during the first extended warm period in April. Tie all fleeces of wool with paper twine and pack in standard wool bags. Sell through wool pool.

BEEF CATTLE

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FRUIT

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HAY AND HAY CROPS

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IRRIGATION

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Control Flies.....Sept. 1953
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